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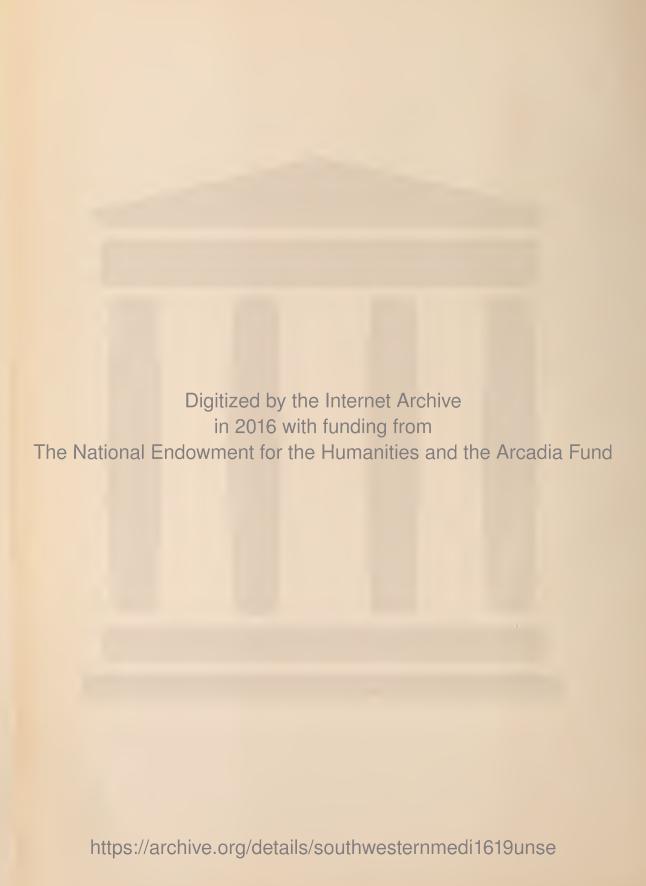


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# SUTHWESTERN MEDICINE

(REGISTERED U. S. PATENT OFFICE)

Volume XVI

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OFFICIAL ORGAN

OF THE

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ARIZONA STATE MEDICAL ASSOCIATION

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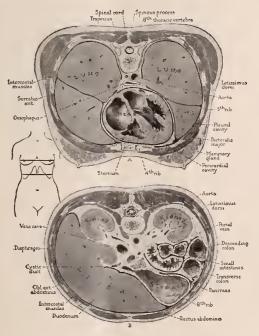


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#### PROBLEMS AND MANAGEMENT OF INTRACTABLE ASTHMA

GEORGE PINESS, M. D. and HYMAN MILLER, M. D. Los Angeles, Calif.

(Read before the Seventeenth Annual Meeting of the Medical and Surgical Association of the Southwest, held at Phoenix, Arizona, Dec. 3-5, 1931.)

Intractable bronchial asthma may be defined as a persistent, obstinate, refractory type of bronchial asthma that is unvielding to modern methods of therapy. To be so classified, a case of bronchial asthma must have had a complete study in the broadest sense of the word "complete". Such a study having been made, the case may be classified as intractable either because the complexity of factors involved makes successful specific treatment impossible in the hands of the general practitioner or even the allergist, or, the etiology being undeterminable, there is failure of nonspecific treatment. Ordinarily this group is thought to constitute 20 per cent of all asthmatics, but in the hands of the competent allergist this may be reduced to about 10 per cent by a study and management which we are to discuss in detail below.

Before a final diagnosis of intractable asthma is made, one must not forget or discount the responsibility placed on the physician by such a diagnosis, for, immediately this is made, the prognosis becomes hopeless, not only as to relief, but as to cure, and not infrequently as to life. Moreover, the psychological effect on the patient is quite the same as in an individual who might be diagnosed as tuberculous, which diagnosis remains as a permanent stigma upon him. Should the diagnosis be in error and relief or cure be accomplished by some other physician, or spontaneous cure arise through some unknown cause, medicine in general, and allergy in particular, would be placed in a position of disrepute. Therefore, it has been the

policy in our office never to consider a case intractable until a most comprehensive and careful regime of study and observation has been carried out. Of prime importance is our attitude toward the patient when first coming under our care. Regardless of the duration or severity of symptoms, regardless of the fact that he has been under the care of the most competent practitioner, and despite the hopelessness of the prognoses which have been given him, he is advised that he is to be considered by us as an entirely new case to be studied as a completely new problem. However, on the completion of the study, he is advised that we should be and will be glad to compare the results of our studies with those of others. In this manner, not infrequently, a patient who may have been classified as intractable from the previous studies of others, may be removed from this classification, thus explaining the reduction of percentages above mentioned.

Since we are in accord with the opinions of most workers in the field, that bronchial asthma is due to the multiplicity of factors that go to make up the allergic constitution, it is well that, in studying these individuals, every possible source of information be minutely and persistently searched out. Only in this way can we arrive at the correct diagnosis, the true etiology, the principles on which treatment by specific and symptomatic measures is to be carried out, and the proper prognosis.

Of first importance is a searching history beginning with the patient's heredity. A positive hereditary history of some type of allergy is of some aid but not always necessary for diagnosis, as but 47 per cent of our patients give such a history. A positive hereditary history has not been found to affect the prognosis as to severity or duration, but does usually have some bearing on an early onset of the disease and the presence of protein sensitivity.

In obtaining a personal history, the following are some of the points which must be kept in mind. We have found that the earlier the age of onset, the more likely is the individual to be sensitive to proteins, and, conversely, as age increases so does such sensitivity decrease. As to prognosis, it cannot be too strongly emphasized that the age of onset cannot be used as a criterion, because, despite popular belief, prolonged, severe, intracable asthma may begin in early childhood as we'l as in later life.

A history of some other allergic disease preceding bronchial asthma suggests specific sensitivity. A history of acute infectious diseases and their relation to the present illness, especially with regard to the onset of asthma, and their influence on its course, is extremely significant, particularly since acute or chronic respiratory infections are often associated with the more chronic and persistent types of asthma.

Information with regard to the occupation of the patient is frequently a factor that makes possible the change from the diagnosis of intractable to controllable bronchial asthma. Occupations most commonly found to be important in causing persistence of symptoms are: baking, beauty-parlor work, dairying, hostling, pharmacy, and not infrequently hotel work and house-keeping.

The seasonal variation of symptoms is not important in the type of asthma under discussion except that a history of seasonal variation at the onset would give a clue as to the original etiology. With the onset of perennial symptoms, however, as is characteristic in this group, this would not be of significance either as to cure or prognosis.

The effect of environment and climate on the course of the disease is more important than seasonal variation, because of the many causes that might be conducive to the continuation of symptoms. These may result from constant contact with some offending substance, such as feathers, face powders, certain rugs, furniture, and so forth. Conversely, change of environment or climate, although giving temporary relief, should not be overemphasized in considering the prognosis. Too often is this made a necessity for the constant peregrination of the chronic asthmatic, which so often results in his economic, social, and physical bankruptcy. One cannot too strongly decry the tendency on the part of many physicians who are only too ready to advise such changes. This, we feel, is often an admission of defeat.

A history of food dislikes and idiosyncrasies, often dating back to childhood, may give a lead as to some protein sensitization. Of less value, because of the prevalence of so

much food faddism, is the history of the definite relationship of some food or foods to the onset of attacks. It must be remembered in this connection that a starvation or semistarvation diet may lead to the relief of symptoms in the most severe and persistent asthma. One must not be misled by such phenomena into the diagnosis of a definite causal relationship between food and symptoms or be carried away by the apparent improvement under the widely touted elimination diets. Improvement under such regimes constitutes a diagnostic pitfall which often results in permanent harm to the patient and vain regrets on the part of the physician.

A minute study of the character of the symptoms is an absolute essential to proper diagnosis, care, and prognosis, in each patient. Dyspnea being the fundamental symptom of bronchial asthma, we must inquire into its every phase. We must inquire into the factors which brought on the first and subsequent attacks, into its vagaries, variations, and violence, its periodicity, its persistence, and the means used for relief.

Cough is the second most common symptom, and here all that was said with regard to dyspnea also applies, in addition to which one must determine the character and amount of sputum and whether productive or non-productive cough persists between attacks of dyspnea. Other symptoms, such as those related to the gastro-intestinal tract and other systems, should not be neglected, for we must remember that the asthmatic suffers from a constitutional disease which may affect the entire body metabolism. Last but not least, is the inquiry into the psyche of the patient. His economic, social, and even his moral burden, must be weighed and considered. More could be said with regard to the inquisitiveness which must be exercised in order to elicit those small grains of information which often mark the difference in the diagnosis between intractable and controllable asthma, but sufficient has been said to indicate what was meant by "a complete and searching history."

We come now to the psysical examination on which is dependent the identification of the characteristic complications and sequelae which make the members of the group under discussion intractable to treatment. It is not our object at this time to enter into a discussion on differential diagnosis, but we do feel that the following conditions, which simulate bronchial asthma and run a course similar to that of the type under discussion, should be ruled out. They are chronic bronchitis with associated bronchiectasis, pulmonary abscess with bronchial fistula, chronic fibroid pthisis, chronic heart disease,

pulmonary sclerosis, pulmonary and mediastinal new growths, enlarged tracheobronchial glands, pulmonary tuberculosis, foreign bodies, Vincent's infection, and pulmonary

mycosis.

The common complications and sequelae usually brought out by physical examination are bronchitis, bronchiectasis and emphysema, any of which will influence the management and treatment of the individual and, obviously, the prognosis, as will be dis-

cussed more fully later.

Clinical and x-ray studies of nose and accessory sinuses should be done routinely, the object being to determine sources of focal infection, not because we believe they are necessarily the basis of the symptomatology, but merely because of the general constitutional good that may be accomplished by their eradication. X-ray studies of the chest are particularly important in chronic intractable asthma, again because of the sequelae and complications that may manifest themselves. In ordinary bronchial asthma, very little, if any, pathology is evidenced in the plate; merely an increase in size of chest, pulmonary emphysema, bronchial thickening, and flattening of the diaphragm. The most important role of the x-ray is to aid in bringing to our attention such conditions as foreign bodies, pulmonary tuberculosis, bronchiectasis, tumors, and so forth.

Laboratory studies of the blood, urine, and sputum, in uncomplicated cases, reveal very little valuable information. The urine usually shows no characteristic changes. The blood may reveal an anemia which may be sufficiently great to warrant treatment. An eosinophilia may be an additional point in the confirmation of the allergic basis of the disease. The sputum examination rules out tuberculosis, Vincent's and fungus infection.

SKIN TESTS

In a previous statement we took the attitude that the patient should be studied from an unbiased viewpoint; therefore, we contend that he should be tested with every available protein. This is not in accord with the opinion of many allergists and particularly of Brown. We contend that the patient, regardless of his intelligence, cannot give the a lergist the information required to determine what he should be tested with, and believe that, when patients are tested with every protein available, there will be fewer cases to be classified as nonsensitive and so brought into the intractable classification. The method of testing is a matter for the choice of the individual practitioner. Surely the best method is that one in which the operator is most efficient, although we advise that every patient be studied by both intradermal and scratch methods, using the latter first to avoid untoward and dangerous reactions. Regardless of the method of testing used, a far more important consideration is that the activity and reliability of the proteins be beyond suspicion. Finally, the individual interpreting the reaction must know the difference between the true, pseudo and negative, reactions. After all testing has been done and one is still of the opinion that the results do not fulfill the expectations, then the patient should be retested until one is satisfied that nothing more is to be learned by persisting further. Positive reactions are valuable only when they corroborate the clinical history, as to time, season, habitat, environment, and so forth. We do not take the attitude that a diagnosis of intractable, as opposed to controllable, asthma should be made on the basis of a difference in sensitivity, for intractable asthma may be present in the individual who is demonstrably sensitive. Too often in the past there has been the tendency to classify the non-sensitive individual as suffering from bacterial asthma, which has been taken to be synonymous with intractable asthma. Bacterial asthma, so far as scientific proof is concerned, is still the figment of the imagination of those who decry the necessity for complete and repeated protein study, of those who have, through empiric methods, found a certain panacea in snake venom, peptone, vaccine, and so forth. This is brought out mainly to emphasize the fact that a large proportion of the group of intractables is removed from this classification by the results of a complete and conscientious study.

Having, by the methods outlined above, limited the number of intractable asthmatics to an irreducible minimum, let us further examine the nature of this group. We feel that it can be properly divided into two types: the first, the intermittent; and the second, the persistent. The clinical characteristics common to both are: onset at any age, with both sexes equally represented, no relation to heredity, not dependent on the presence or absence of protein sensitivity, usually perennial with or without seasonal exacerbations, and with no relation to environment.

The first group is characterized by intermittency of attacks, with complete absence of symptoms and physical signs during the free period, except for the characteristic picture presented by the mucosa of nose and throat, and the absence of complications and sequelae characteristic of the second group.

The second group is characterized by persistent wheeze, cough, and dyspnea, with acute exacerbations, usually nocturnal, brought on by many stimuli, psychic, physical, and protein. This group is never free of

symptoms, many of which are due to sequelae such as emphysema, chronic bronchitis, bronchiectasis, and so forth. On the other hand, the asthma may be a symptom of such preceding conditions as fibroid pthisis, unresolved pneumonia, mediastinal growths, and so forth.

With these facts in mind, we can turn with some degree of comfort to a rational method of treatment. This, perforce, must be palliative and symptomatic in character, having as its objects the reduction of disability, the prevention of further progression of complications, the warding off of a fatal outcome, and the giving of a certain amount of comfort to the patient.

GENERAL MANAGEMENT

What is to be said under this head follows rationally from what has been said with regard to the necessity for a thorough and painstaking history and examination, and is dependent entirely upon such an examination. Taking up first the hygienic care of the patient, this must be considered from both the psychological and physiological standpoints. From the psychological standpoint, every effort must be made to furnish that equanimity without which all further treatment may be of no avail. Often the factors controlling the psyche of the individual are beyond the control of the psysician. However, much can be done with proper advice regarding social relationships and economic problems. More directly under the control of the physician is the physiological well-being of the patient. It is proper, when so indicated, to put the patient to bed for prolonged periods, preferably in a hospital, which accomplishes the double purpose of absolute control of the physical well-being of the patient and removal from psychological environmental factors which may continue to aggravate and produce symptoms. After a prolonged period of bed rest, proper exercise should be instituted and encouragement given to the patient to attempt activities which he had heretofore thought himself unable to accomplish. The dietary must be considered and proper emphasis placed upon it, always keeping in mind the tendency at the present day to overemphasize this phase of the care of the patient. A properly balanced diet, with avoidance of those foods which the patient is certain cause symptoms and which have been found, by means of skin tests, to react positively, is a prime requisite in the dietetics of this disease. There should be a prevention of loss of weight, except in the obese, in whom it is sometimes advisable to produce a reduction in weight. Certain digestive aids, such as hydrochloric acid and digestive ferments, are often found to be of benefit, such benefit being demonstrable only after trial. Advice with regard to the size of meals is important, as it is a characteristic of these patients to have considerable trouble after heavy meals, particularly if taken toward evening. Nutrition can be maintained by giving frequent small meals. Medication should be kept as simple as possible, chief reliance for prolonged medication being placed on the iodides, either by intravenous, oral, or intrabronchial, administration. Ephedrine and adrenalin may be exhibited as needed for acute exacerbations, always keeping in mind that in chronic bronchial asthma we must not permit the patient to become adrenalin fast, for, in emergency, we must rely on this drug for relief. In order to control apprehension, a common symptom after a prolonged bout of asthma, sedatives such as the bromides may be used. On no account should a narcotic or habitforming drug be used, a principle which holds for all chronic diseases. When indicated, tonics may be given and are often of help in improving the appetites of many of these patients.

In those patients in whom there are complications such as tuberculosis, bronchiectasis and so forth, the commonly accepted modes of treatment for these conditions must supplement all the above, and not infrequently, especially in bronchiectasis, does the patient obtain considerable relief from such treatment.

Even in the intractable asthmatics, the demonstration of specific protein sensitivity necessitates specific treatment. For such environmental factors as pollens, hairs, feathers, and so forth, which cannot be avoided, antigens should be prepared and administered in the usual manner, which need not be entered into here. The environment and occupation should be controlled on the basis of the skin tests, as should also the dietary. In the non-sensitive type, vaccines, either autogenous or stock, should be tried out. We have found but little difference in the efficacy between the autogenous and the stock vaccines.

There is one phase of the treatment of the intractable asthmatic which must be given especial attention and that is the acute, prolonged, and ungovernable attack of asthma. These attacks are of the type which not infrequently precede a fatal outcome. In the role of allergist, we have had occasion to see a considerable number of patients in such paroxysms and what we have to say with regard to their care is the result of our experience with them. Before entering into a discussion of how we care for these patients, it must be brought out that we see them late in the attack, after adrenalin has been used to the point where

it is no longer effective, after cyanosis of marked degree has set in and has been relieved by the administration of oxygen, when repeated use of any one of a number of narcotics (such as morphine, codeine, pantopon) has been made, all without avail. The patient is usually semi-conscious, cyanotic, dessicated, and suffering from agonizing, exhausting dyspnea. To handle these patients without hospitailzation is inviting disaster. It is our practice to place them in a hospital, preferably in a room specially prepared to eliminate all environmental factors which our experience has shown to be possible causative agents in precipitating or prolonging an attack. Fluids are forced per rectum, intravenously, or by hypodermoclysis. Sedatives such as chloral, bromides, or chloretone, by rectum, are often effective in quieting the nervous irritability of patients. Instead of oxygen, carbogen is used to stimu'ate deeper respiration, thus often opening up bronchi occluded by mucus plugs. Removal of such plugs can also be facilitated by the intravenous administration of sodium iodide. Caffeine hypodermically has proved of great value in supporting the circulatory system of such patients and at times has proved a successful substitute for adrenalin.

#### HEADACHES DUE TO SPECIFIC HYPER-SENSITIVENESS.

History Taking and Etiology.
RAY M. BALYEAT, M.A., M.D., F.A.C.P.,
and

HERBERT J. RINKEL, M.D., Oklahoma City, Okla.

(Read before The Medical and Surgical Association of the Southwest, Seventeenth Annual Meeting, Phonix, Arizona, December 4, 1931.)

#### I. HISTORY TAKING.

The occurrence of allergy in the individual is of great aid in establishing the syndrome of headache due to specific sensitization. The diagnosis of this type of headache is made after three studies have been completed; namely, the history, physical examination, and the laboratory tests. Of these studies we shall discuss only history taking in this paper.

After ascertaining the patient's symptoms and their duration, one should inquire as to the occurrence of signs that indicate other allergy—for instance, attacks of sneezing, alternating nasal congestion, and so forth. The age of onset is first ascertained. The likelihood of specific sensitization as a cause of headache is greatest in those that begin in the first decade of life. The management of a case depends to a great extent on the frequency and duration of the headache, as does the interval of occurrence.

The presence of nasal congestion should be elicited at this time.

Prodromal Stage. If this stage is present, the patient may feel heavy, dull, apathetic, indifferent, and irritable, or may be hyperactive, both mentally and physically. Some patients have bulimia during this stage and others note a profound or druggy sleep preceding the headache.

Aura. Is there an aural stage? Elicit the presence of scotomata, colored rings, luminous zig-zags, hemianopsia, blurring of vision, and photophobia, being sure to determine if the visual disturbances are ipsolateral or contralateral to the hemicrania. Are there auditory or olfactory changes? Does the patient complain of paresthesia? The majority have symptoms in the hands, feet, and face, in the order named. What motor symptoms are there? Are there vasomotor disturbances, such as flushing or pallor? Is there vertigo?

The Attack. What are its characteristics? Does the headache occur along with the onset of aura or follow it? Is it manifested without any premonitory or aural symptoms? Where is it located—temporal, frontal, occipital, and so forth? Is it hemicrania, alternating hemicrania, or unilateral headache becoming generalized, bilateral becoming hemicrania, or bilateral throughout? The occurence of nausea and emesis, both with recent attacks and attacks early in life, should be considered. In children one is interested in the occurrence of pyrexia.

Postmigrainous Phase. Is there a postmigrainous stage, and, if so, what symptoms are manifest? The usual features are polyuria, rhinorrhea, and sleepiness, along with exhaustion and depression. In every case there should be a routine inventory of systems and a detailed analysis of the course of the disease and the variation of symptoms in different attacks. We aim to establish the occurrence of allergy in the individual. This is materially aided by analysis of the family tree, a study of the patient's past history, and ascertaining the presence of symptoms that indicate specific sensitization in the individual.

The Family History. We have shown in a previous communication that allergic diseases existed in the antecedents of 82.1 per cent of the patients suffering from headaches due to specific sensitization. Therefore, we not only elicit the occurrence of hay-fever, asthma, hives, eczema, and epileptiform seizures, in the antecedents, but familial headache as well.

Past History. The past history of the individual is next studied, in order to elicit manifestations that will aid in establishing the diagnosis. Of these various phenomena we inquire as to the occurrence of food intolerance and eczema in infancy, and afebrile colds and bronchitis in childhood. Amelioration of these symptoms after pyrexia indicates their allergic nature and enhances their diagnostic importance.

Symptoms That Indicate Specific Sensitization: In every allergic individual there are certain manifestations which are indicative of this state. The most common symptom is that of itching; therefore, the occurrence of itching of the nose, itching of the roof of the mouth, itching of the back of the throat, itching of the eyes, and itching along the eustachian tubes, is elicited. Other manifestations that are of aid include paroxysms of sneezing attacks, of nasal congestion, rhinorrhea, excessive lacrimation, and a tendency to develop frequent colds. In addition to these symptoms, one deals, of course, with the obvious evidences of allergy, such as wheezing and cough in asthma, or the wheal formation of urticaria, and so forth.

Dietetic History. Our final step in the history taking is to obtain a careful dietetic history of the patient. We should elicit with great care the choice of food, not only during the entire year, but in early life, and any fads, fancies, or dietary regimes that the patient has followed.

Having completed the history and physical examinations, one is able to determine the need of additional study from the standpoint of nasal deformities, chronic infected tonsils, and so forth,

#### II. ETIOLOGY.

In migraine and other headaches due to specific sensitization, there is a predisposing background and an exciting factor. Foods, and foods alone, have been found to be the exciting factor in cases of migraine reported in this paper.

#### A. PREDISPOSING FACTORS

Heredity. Of the various predisposing factors in headaches due to specific sensitization, none is of more importance than that of heredity. We have shown in a previous publication that migraine is interchangeable in the linkage with asthma, hay-fever, urticaria, and other accepted allergic manifestations. In addition, we find that approximately 80 to 85 per cent of all of our cases suffer from these syndromes. In analyzing the family history of these patients, it has been found that migraine or some of the well established allergic diseases were present in approximately 82 per cent of the families. The ratio of a unilateral and bilateral history is approximately 7 to 1. In cases with a unilateral family history, the mother transmitted the tendency in ratio, to the father, of 2 to 1. The hereditary familial history appears to have a higher incidence in migraine than in asthma and hay-fever. Spain and Cooke<sup>2</sup> found a positive antecedent history in 58.4 per cent in a series of 462 cases of bronchial asthma and hayfever. Rowe' found positive family histories in 56.4 per cent of his cases. We have reported a positive family history of allergic diseases in 60.1 per cent of patients with asthma and hay-fever, 67.6 per cent in cases of urticaria, and 64.3 per cent in eczema. The fact that headaches occur in 20 per cent of all patients presenting themselves for allergic study, that those who suffer from headaches have a family history of well accepted allergic diseases in approximately 82 per cent, and that they themselves suffer from these allergic diseases in approximately the same per cent, all indicate the probability of specific sensitization as the etiological factor.

The Relation of Epilepsy and Migraine. In many writings concerning migraine, reference is made relative to the association of epilepsy in the family. In reviewing the literature on migraine, we are impressed with the fact that many believe that epilepsy and migraine are closely related. Gowers believed it. Hassin' states that it is interchangeable in the linkage with epilepsy and mental disorders. Church and Peterson' state, "Any neuropathic family is almost sure to present cases of migraine. It seems capable of transmission by transformation, alternating with hysteria, epilepsy, and insanity." E. Bates Block states that "it occurs especially in nervous people or members of neurotic famiiles." Timme10 states, "It need not be assumed, however, as indicated by most textbooks, that the hereditary factor must be migraine itself. In the experience of the writer this is but one of a number of symptoms which merge into one another, are metamorphosed in passing from parent to offspring. . . This group of symptoms comprises epilepsy, glycosuria, giantism, carcinoma, asthma, urticaria, the arthritides, Raynaud's discase." In a recent work, Bray states that, after a study of several hundred cases, he has been unable to establish the association of epilepsy with allergic conditions. He stresses the fact that migraine and epilepsy are relatively common, and that it is quite probable that the two should coexist in the same individual. We must agree with Bray. Many authors class the migrainous patient with the neurotic. This is true of a number of patients, but the great majority of migrainous individuals do not belong to the neurotic group. It is true that most of them are people with sensitive mentalities and mercurial dispositions, but they are dynamic characters and are frequently leaders in their lines of endeavor.

In our series of cases, the ratio between female and male has been that of 2 to 1. Approximately 30 per cent manifest symptoms by the end of the first decade, another 30 per cent within the second decade, and approximately 25 per cent in the third decade. The remaining cases are scattered throughout the fourth and fifth decades and later years.

The incidence of migraine varies in different groups of patients. In our survey presented in March, 1931, we found that physicians were afflicted in approximately 8 per cent, nurses in 12 per cent, unemployed male laborers in 3½ per cent, and women teachers in 10.4 per cent; also high school male students in 6.5 per cent and female high school students in 13.5 per cent. These figures have been obtained both by the study of patients and by a detailed questionnaire.

There is no definite evidence indicating that these headaches are influenced by climate. Occasionally a change will bring temporary relief. Occupation may be of importance in cases where dust is a factor or where there is a tendency for the patient to undergo physical and mental fatigue. Again, attacks may be precipitated by occupations that require excessive use of the eyes.

In eighty consecutive basal metabolic tests, there were sixty-one patients whose rates would vary from minus 1 to minus 33, the average being minus 7.29. There were nineteen whose rates were from plus 1 to plus 22, with a general average of plus 2.2.

#### B. EXCITING CAUSES.

The proved exciting factors in migraine have been foods. The non-migrainous headaches may be precipitated by inhalants as well as by foods. One of us12 has presented a number of cases showing the specific relation of foods to the onset of headaches. Vaughan<sup>13</sup> and Rowe<sup>14</sup> have also reported this specific relation. In proving sensitization to food one soon learns that in certain cases he is able to induce a headache every time that food is ingested. Headache may result from the taking of specific foods but does not occur each time the patient takes this particular food. Patients have attacks at 10 or 12 day intervals; sometimes they may go as long as six weeks before experiencing an attack. When the food to which they are sensitive has been removed from the diet, they are free of headaches; and when it is again placed in the diet, the attacks reappear. Occasionally a patient states that he may eat one or two foods separately, but if both of

these foods are taken at the same time he will have difficuty.

In the non-migrainous headache, specific sensitivity may result in unilateral nasal congestion and thus produce hemicrania, which promptly ceases when the congestion is relieved. A non-migrainous hemicrania is often produced by food, as are bilateral headaches.

Any food may produce headache. It is a matter of experience, however, that wheat, egg, and milk—especially milk—potatoes, beef, pork, apple, onion, the legume group (namely, navy beans, lima beans, kidney beans, string beans, lentils, soy beans, peanuts), and some of the nuts and shell sea foods, are the common offenders. The amount of food that is necessary to precipitate a headache is indeed small. The difference in milk content of country and creamery butter is a common cause of symptoms.

Finally, let us state that the determination of the etiological factor is a matter of trial. We have found, as has Vaughan<sup>15</sup>, that the laboratory tests, that is, scratch and intradermals, are the best means by which to outline care and to begin treatment.

Demonstration of the etiological factor by clinical testing is illustrated in the following cases.

CASE 1. Dr. R. J. H., age 35, was subject to attacks of migraine at irregular intervals. On testing there were no definite reactors. An analysis of the diet indicated that apple was a very probable cause. Clinical trial proved that both apple and onion would produce hemicrania with paresthesia, scotomata, and hemianopsia. As little as one-eighth cube of raw apple will initiate symptoms. There has been no recurrence except when apple or onion is used in the diet.

CASE 2. Mrs. B. W., age 48, school teacher, seen for a chronic form of headache, following previous attacks of migraine. There were a number of positive fords by the scratch and intradermal methods of testing. On clinical trial it was proved that egg. chicken meat, beef, white potatoes, and pear, will produce headache. When these foods were out she was entirely free of the headache, and each time one of these foods was used in the diet she would have a headache.

CASE 3. Mrs. C. O. E., age 47, was seen because of migraine. Clinical testing with milk showed that headaches of two or three days' duration would occur each time that milk was used. By trial we learned that as little as one teaspoonful of milk would produce headache 72 hours after ingestion.

There is apparently a definite time interval, which varies in different patients, between the ingestion of the food and the onset of symptoms. In Case 3, this interval was 72 hours. In Case 1, the interval was 7 hours. This period is apparently the same for all foods that cause difficulty but it varies in individual patients.

In a subsequent paper which deals with rathology and symptomatology we shall discuss in detail the symptoms produced by ingestion of a food to which a patient is hypersensitive.

#### REFERENCES

1. Balyeat, Ray M.; and Rinkel, Herbert J.: Further Studies in Allergic Migraine: Based on a Series of Two Hundred and Two Consecutive Cases; Annals of Clin. Med., December, 1931, 5:6, p. 713.

Spain, W. C.; and Cooke, R. A.: Studies in Specific Hypersensitiveness, J. Immunol., 9, p. 523,

3. Rowe, Albert H.: The Treatment of Bronchial

Asthma, J.A.M.A., 84, pp. 1902-1905, 1925.

4. Balyeat, Ray M.: Urticaria: Diagnosis and Treatment Based on the Study of One Hundred and Eigthy-eight Cases, J. Okla. St. Med. Assn., 24:3; March, 1931.

5. Balyeat, Ray M.: Allergic Eczema: Based on the Study of One Hundred and Eighty-one Cases, J. Allergy, 1: 6: p. 516.

6. Gowers, British Med. J., Dec. 1906, p. 1617;

also June 12, 1909.
7. Hassin, George Boris, in Abt's Pediatrics. 8. Church, Archibald; and Peterson, Frederick: Nervous and Mental Diseases, W. B. Saunders Co.,

Philadelphia, 1922, p. 661. 9. Block, E. Bates, in Tice's Practice of Medicine, W. F. Prior Co. Inc., New York, 1922, 10, pp.

381-382.

10. Timme, Walter, in Nelson Loose-Leaf Liv-ng Medicine, Thomas Nelson & Sons, New York. ing Medicine, pp. 654A-654H.

11. Bray, George W.: Recent Advances in Al lergy, P. Blakiston's Son & Co., Inc., Philadelphia 1931, p. 334.

12. Balyeat, Ray M.: Allergic Migraine: Based on the Study of Fifty-five Cases, Am. J. Med. Sciences, 1930, 180, p. 212.

13. Vaughan, Warren T.: Allergic Migraine, J.A.M.A., 88, pp. 1388-1386, 1927.

14. Row. Albert H.: Food Allergy, Lea & Fe-

biger, Philadelphia, 1931, p. 243. 15. Vaughan, Warren T.: The Diagnostic Program in Food Allergy, Am. J. Med. Sciences, 182, p. 459, October, 1931.

#### GASTRO-INTESTINAL ALLERGY AND ITS SEQUELAE

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The whole field of allergy is so new compared to other phases of medicine that many of our ideas on the subject will remain theories for years to come. These theories cannot become definite facts until a sufficient length of time has elapsed for clinical and physiological evidence to prove the truth or falsity of our conceptions. Consideration of this subject should begin with as clear a conception as possible of what is meant by allergy. It is relatively a new term and, notwithstanding the great amount recently published on the subject, there may be some who do not understand clearly what is meant when we speak of allergy.

Von Pirquet in 1906 used the word to describe the difference between the reactions

produced by the first inoculation with cowpox virus and the second; later, however, he modified his use of the word and defined it as an altered reaction capacity. He and almost all the other workers in this field use it to describe all forms of altered reactivity, without regard to mechanism involved, and to indicate any form of hypersensitiveness not falling under the strict definition of anaphylaxis. Used synonymously are the terms "phenomenon of hypersensitiveness," "idiosyncrasy," and "atopy."

The history of the development of the study and comparative understanding of allergy and its manifestations is so intimately related to the study of asthma, hay-fever, anaphylaxis, and so forth, that to separate them is difficult.

In 1906 and 1910, Rosenau and Anderson worked with the details of many of the fundamental features of anaphylaxis. It was not until 1910 that Mettzer observed the relation of anaphylaxis and bronchial asthma, and the clinical hypersensitiveness began to be recognized. From 1915 to 1917, Walker, Cooke and Vanderveer and Goodale made rapid strides in explaining many things heretofore poorly understood. Thus, we see the entire development of the conception of human allergy has taken place since about 1915. This fact alone justifies our statement at the beginning of this paper.

When we began to correlate human hypersensitiveness with disease conditions, hay-fever and asthma received all the attention at first; then, gradually, it began to be recognized as an etiological factor in other conditions. Though Osler described patients with purpura, urticaria and angio-neurotic edema who also had various visceral symptoms, in 1903 and 1904, and remarked that before long the "Anaphylactic Key" would unlock the mystery of them; and it seems that this prophecy has been fulfilled.

Since its universal recognition, allergy has taken within its fold and solved many probheretofore poorly understood; but there are many things yet to be explained. In the enthusiasm of workers trying to solve difficult questions, their interest in a new field may carry them too far and cause an inclusion in that field of conditions which do not actually belong there. Some of the so-called physical allergies advocated by Duke and others, may yet prove to be entirely outside of the realm of hypersensitiveness. Endocrino'ogy, when more fully understood, may absorb much that we now include as allergy. As a matter of fact, as we delve further into this, we may at some future date determine that a disturbance in the physiology of the endocrine system

may be the "why and wherefore" of allergy. However, some of the gastro-intestinal symptoms produced by hypersensitiveness seem to be well enough understood and established to fall within this category withnot argument or fear of being displaced.

Perhaps no field in medicine is beset with so many difficulties in diagnoses as gastroenterological conditions, and, in making studies and diagnoses on these cases, it is just as important to keep allergy in mind as it is in studying the respiratory system. The gastro-enterologist has but few methods of diagnosis as compared with men in other fields. History and symptomatology are the things upon which we must largely depend. Duke concisely expressed this fact: "Allergy is important in its relation to the gastro-intestinal tract, not only because it can produce serious gastro-intestinal disorder, but also because it can simulate both furctional and organic disease due to other causes." Unless it is considered seriously and intelligently, many avoidable errors in diagnosis will be made. This is borne out in Rowe's study of 150 cases of gastro-intestinal allergy in whom forty-seven had had abdominal surgery, although no lorganic lesions were found in eighty of the 150 that were examined by x-ray. It may be stated that allergy, generally speaking, like syphillis, is the "mocking bird" in the field of medicine. Allergy in the gastro-intestinal tract will simulate somewhat many known diseases, but it will not fit into a pattern exactly and, hence, will give a lead to its true nature. Therefore, in studying these cases, when one does not fall into the wellknown classification of a certain syndrome, errors will often be avoided if we keep allergy in mind and prove its presence or absence.

The bizarre nature of symptoms in the gastro-intestinal tract that will prove to be allergic and cured by the elimination of offending material, must be recognized. There is no set group of symptoms that mean allergy. To refer again to Rowe's study, there are tabulated twenty gastro-intestinal symptoms. The history of other manifestations of allergy in the patient or in his family should call our attention to the possibility of allergy in the gastro-intestinal tract.

The question will arise in the minds of many as to whether so-called gastro-intestinal allergy exists and produces symptoms. There is little doubt when we recall the pathology occurring as a result of idiosyncrasies in other parts of the body where the condition is more clearly understood and is demonstrated, such as the nose and skin. When we study the histology and physiology

of the gastro-intestinal tract, we understand that we have an area of something over twenty feet in length which is just as capable of setting up disturbed mucous membrane, physiologically, as are those parts of the respiratory tract which are histologically similar; and it would occur to us that, with all this amount of tissue subject to allergic changes, the symptoms produced would likely be more severe, more intense, and more variable than in the relatively smaller area of the respiratory tract. When we realize that the comparatively insensitive skin reacts easily to allergic conditions, then we must conclude that hypersensitiveness in the gastro-intestinal tract is more likely to occur than in the skin. However, these changes cannot be seen by inspection, as is the case with hay-fever, urticaria, and so forth; and they cannot be picked up objectively by the diagnostician, and hereto-fore have been relegated to that "scrap heap" known as vague and secondary abdominal symptoms which would probably clear up with a dose of castor oil or by giving nature a little time. Typically, the lesion is characterized by anemia and eosinophilic infiltration of the parts affected and a surrounding area of erythema. This actually constitutes a hive, whether it be in the skin or in the gastro-intestinal tissues. usually associated with sensory disturbances, such as itching, and in abdominal tissues sometimes with pain. This pathological reaction may occur in any portion of the gastro-intestinal tract, from the lips to the rectum, and give rise to local and general reactions of allergy varying from mild local itching and swelling to profound shock and even death, if the necessary relief is not administered. Striking examples of this are the cases reported by Richet of a baby, sensitive to milk, who went into collapse and died after a feeding of 100 gms. of milk; and a second case of an egg-sensitive child of 8 years, who went into profound shock after ingestion of egg.

The immediate allergen that precipitates manifestations of hypersensitiveness in the digestive tract, is much more frequently a food than any other antigen. The food, or foods, are usually quite specific. When it is not a rather constant condition, the patient may realize, himself, what the offender is; he may observe that every time he eats pork, for example, he has abdominal distress. Then again his personal likes and dislikes of foods are sometimes guided by his own sensitivities, although unrecognized by himself and his physician as such.

Not infrequently, the continued feeding of one specific food over a long period of time will sensitize a patient to that food and, conversely, occasionally withholding that article from his diet long enough will allow this acquired sensitivity to abate itself.

It is the theory of Duke that a person can be skin sensitive to a particular food, but the gastric and duodenal juices convert this substance in the process of digestion so that it becomes inert as far as creating symptoms is concerned. Conversely, it is our opinion that certain food stuffs to which the skin is not sensitive can produce trouble if they are not properly digested in the stomach and the intestines. Thus, we have the picture of the digestive juices acting as a protective agent in one case and, in another, actually producing a pathological condition. If the process of digestion is not chemically perfect, by-products are formed to which the patient is, or may become, hypersensitive. This is probably true also in the action of harmful bacteria and parasites causing fermentation and putrefaction. This fact may explain why skin tests of all types and strength may remain negative although repeated from time to time and containing an extract of a food that we are reasonably certain, from a clinical standpoint, is a trouble maker.

We find that the sequelae of gastro-intestinal allergy divided into three phases, acute, subacute, and chronic. It is hard to differentiate an actual acute sequela from the clinical symptomatology present during the allergic reaction, but we feel that acute flare-ups do occur without any definite al-

lergic symptoms present.

The subacute is a milder manifestation, following continual and repeated upsets, and changes the physiology of the gastro-intestinal tract to an appreciable point. The chronic type of sequela is the most disconcerting and is the one which causes the patient most trouble in months and years after allergic attacks. These are the things that cause the gastro-enterologist and the surgeon trouble in taking care of the patient. They, of course, must be treated according to their clinical manifestations, regardless of the allergic etiological factor at the beginning. They are the things that the allergist should be able to control by stopping the atopic manifestations in their incipiency. Thus, the allergist is an important factor in the field of preventive medicine.

We are not at this time considering the effects of gastro-intestinal allergy on other organs in the body. Undoubtedly this type of allergy will cause permanent changes in other organs. The time does not permit us

to dwell on these. As stated before, allergy is so new, comparatively, that we do not have the material with which to work. Some of these types of sequelae have many cases for study and presentation; others, only a scattered few. We shall try to give, in conjunction with the discussion, at least one example of each type mentioned.

One of the simplest sequelae, and yet one with which we have to deal more commonly than with others, is the presence of symptoms of indigestion, so often found in the patient suffering from a gastro-intestinal allergy. This is due to a disturbed chemical physiology in the stomach and the intestines. It is well known that most allergic patients have a low hydrochloric content of the stomach; whether or not this is the cause or effect is a disputed question. This, within itself, causes an improper digestion of the food in the stomach and results in a delayed and impaired outpouring of pancreatic secretions into the duodenum. This type of patient so frequently complains of a sense of heaviness in the stomach, a formation of gas, and fermentation of the food. He complains of a lack of appetite, sluggishness, and all the other evils that go with an improper digestion. This condition is undoubtedly due, in the allergic type of patient, to the more or less constant congestion of the mucous membranes of the stomach and intestinal tract. As an example of this type of sequelae, we present the following case:

An industrial worker, age about 45, known sufferer from hay-fever, at various times has experienced gas formation, indigestion and a general ill feeling in the abdomen. These sometimes accompany hay-fever attacks and sometimes do not. He is sensitive to foods as well as to pollens. Gastric analysis shows a low hydrochleric acid. At times when we were not able to demonstrate definite allergic symptoms, the man chronically suffered from indigestion.

In many of our cases suffering from allergy of the gastro-intestinal tract we find an acute diarrhea during and immediately following the attack. If this allergic condition keeps up for an indefinite length of time the patient may suffer from frequent attacks of diarrhea, even at times when allergic reactions are not present. This also, of course, is due to the constant irritation coming from the presence of intestinal hives. In this condition we have the picture of the acute and subacute sequelae and, in time, possibly the chronic type. If this is allowed to continue, a definite colitis—the true type, ulcerative—may develop, due to the secondary infection following the constant trauma in the mucosa. We may have the so-called spastic colitis, the spasm of the musculature of the intestinal tract, and the resulting nervous manifestations; this, entirely separate and distinct from the allergic condition.

Another thing that may result from the constant hammering of allergic attacks of the gastro-intestinal tract is ptosis. can be brought about in two ways. First, due to the chronic indigestion going on, the body economy may be impaired to such an extent that the patients do not receive the proper nourishment from their food; they lose weight, and a subsequent gastroptosis and coloptosis result. However, the most probable factor is the resultant loss of muscle tone, following these repeated attacks, with the disturbed physiology, allowing the stomach and colon to become atonic, and causing loss of peristaltic action and a disturbance in the gradient waves, as described The muscle is no longer as by Alvarez. capable as heretofore in originating and sending its contractilve waves. The following cases are typical of this type of sequelae:

A young woman, definitely suffering from asthma. Every time she has an asthmatic attack there is an accompanying severe diarrhea. This condition exists to such an extent that at times the stools contain blood. In the earlier history of her disease, the asthmatic attacks clear up and automatically clear up the diarrhea. As time goes on, the diarrhea continues long after asthma has cleared up,

showing a subacute enteritis.

A college professor, age about 35, definitely suffers from hay-fever. The hay-fever is seasonal. He has definite attacks of abdominal allergy. Most of the time he is a sufferer from so-called colitis. The x-ray pictures show this to be of a spastic type.

Accompanying, or closely following, the above condition, we find chronic constipation, the reasons for which are more or less obvious if we consider the above statements. The musculature of the intestines has lost its tone. There is probably a descending column of fecal material which has not been properly digested. There may be a spasticity of the colon. There is an irritation at various places along the intestinal mucosa. Secretions have been disturbed. There is possibly a superabsorption of water from the colon. We probably have to deal with an asthenic type of person. There may be a marked ptosis of the colon. There may be constant irritation in the rectum, with a resultant spasmodic closing of the sphincters. All of these factors may be directly traceable to the patient's allergic symptoms. We present the following case to illustrate this type of sequelae:

A man, age 35, who has been a hay-fever sufferer for several years. For the past two or three years has had vague, indefinite pains in the abdomen following ingestion of certain food stuffs. He is definitely allergic to eggs and wheat. This man has been markedly constinated ever since his history of allergic attacks. He has a definite low hy-

drochloric content.

We have discussed the probability of irritation of the mucous membrane lining the intestinal tract, as a result of allergy. Incidentally, it occurs to us that the same

thing may take place in the serous coating of the intestines, but unfortunately our cases have not been frequent enough to demonstrate this to our satisfaction. We feel that possibly there may be an exudation of serum into the peritoneal cavity, which in the course of time would become organized, and membranes and adhesions would be formed. This might result in the formation of a socalled Jackson's membrane in the region of the appendix and the cecum. If this condition does exist, one can easily see that there would be a disturbed physiology in the en-This is detire gastro-intestinal system. monstrated in the following case:

A young college girl, known sufferer from hayfever, had a diagnosis of appendicitis and was operated upon for same. The appendix was removed and found but little inflamed, if any. A few months subsequent to this time she again had a similar attack. She was again operated upon by another surgeon and a Jackson's membrane was removed. Since, she has had attacks of abdominal distress, some of which were allergic and some were not. Gastro-intestinal x-rays show many constrictions throughout the bowel, which are undoubtedly scrous membranes.

There is no doubt in our mind but that repeated attacks of intestinal allergy will cause definite and true appendicitis of all three types: acute, subacute, and chronic. It is logical to believe that, if hypersensitiveness can cause engorgement of the mucous membranes of the alimentary canal proper, it can cause engorgement of the lining of the appendix. It may cause this condition during an allergic attack, but it is more likely to result in appendicitis after the passing of the attack. This is due to the secondary infection in the appendix, following the more or less constant injection of its lining membrane. Of course, as stated, many patients are operated upon for appendicitis and the appendix is found normal, when all that was wrong was an allergic manifestation in the region of the cecum. But we must not allow this fact to blind us to the truth that real appendicitis develops from intestinal allergy. The following case illustrates this:

A Mexican man, first seen showing every evidence of appendicitis. This operation was performed and a low-grade acute appendix was removed. This man had a known history of gastrointestinal allergy. After the removal of the appendix and before proper treatment could be instituted, and, at times, in spite of proper treatment, he still continues to have allergic symptoms of the abdomen. The point of interest here is that the man really and definitely had an inflamed appendix.

The statements that have been made in regard to the appendix are in all probability true of the gallbladder and the bile ducts. The same process undoubtedly goes on in these organs as in the appendix, resulting in an acute, subacute, or chronic cholecystitis, inflammation of the ducts, or even at times a hepatitis. From a physiological stand-

point, these disturbances are of more importance than the involvement of the appendix, because the secretions of the liver are interfered with and the excretions from the gallbladder are disturbed, resulting in an improper preparation of the food for metabolism. These, in turn, may set up a duodenitis, and it is entirely within the realms of possibility that the pancreas also may be affected in the same way. Because of the lack of positive evidence we would not go so far as to say that diabetes is a resultant factor; but, from a theoretical standpoint, this may be the case if the islands of Langerhans become affected. The case now presented is illustrative of this:

A young woman, about 25 years of age, gives a history of having a severe diarrhea, almost regularly at seven-day intervals. The stools are almost pure bile and contain very little fecal matter. She was sensitive to egg, pork and a number of other foods, as manifested in gastro-intestinal allergy and in hives. A cholecystogram was made, showing a definitely thickened, sluggish, non-acting gallbladder—definite evidence of cholecystitis.

We are free to admit that our clinical evidence to back up some of the statements we have made is far from being as plentiful as we desire. But it appears to us that we have seen enough subacute and chronic conditions in the intestinal tract following months and years of gastro-intestinal allergy to justify most of our statements in regard to this matter.

These sequelae as they arise, of course, must be treated symptomatically. If the necessity for surgery has arisen, then surgery must be done. But if these sequelae can be prevented by the allergist, in the beginning stages, we may save many of our patients from the operating table and from We certainly have no chronic ill-health. quarrel with the surgeons who find a surgical condition and operate regardless of the etiology. But we do feel that allergy should surely be investigated before a surgical diagnosis is made. There is a great deal to be gained by being on the alert in looking for allergy in the gastro-intestinal tract; there is much to be gained by what knowledge we have of these conditions; but the greatest justification for a discussion of this nature is the attempt to place before us an incentive for more effort to study and clarify many of the problems that are still poorly understood.

#### SUMMARY

1. Allergy is discussed historically and clinically, with special emphasis on the gastro-intestinal type.

2. Disturbed physiology due to gastro-

intestinal allergy, is shown.

3. Serious sequelae in the gastro-intestinal tract may result from prolonged at-

tacks of allergic reactions, and case histories are given.

4. Etiology of these sequelae should be recognized as allergy and proper preventive methods taken.

#### BIBLIOGRAPHY

Rowe, A. H.: Gastro-Intestinal Food Allergy, J. of Al., Jan., 1930, 1: 2, p. 172; J.A.M.A. 97: 20, Nov. 14, 1931, p. 1440.

Richet, Charles, Jr.: Food Anaphylaxis, J. of Al.,

Jan., 1931, 2:2, p. 76.
Duke, W. W.: Allergy as Cause of Gastro-Intestinal Disorders, Am. Jour. of Surg., May, 1931, 12:2,

Rachemann, F. M.: Clinical Allergy, MacMillan

Alvarez, W. C.: The Mechanics of the Digestive Tract, Paul B. Hoeber Co., 1928.

#### DISCUSSION

DR. E. W. PHILLIPS, Phoenix, Arizona: It was something of a surprise to be asked to discuss, at a meeting of the Medical and Surgical Association of the Southwest, three papers on allergy. The subject

seems to be coming into its own.

Without expecting too much from it, physicians need to understand the peculiar part which sensitization may play in the varying pictures of disease. The internist will find frequent use for a clinical knowledge of allergy, particularly as it affects the nutrition of those suffering from chronic ailments. The abdominal surgeon should know how accurately a food allergy may simulate serious organic disease within the belly, and the nose and throat man should be aware of what allergic reactions can do in his special field, where they may not only resemble sinus infections but may actually lead to such infections. The three papers which we have just heard offer information which is both useful and timely.

I shall discuss only a few points which, no doubt, the writers, if they had had more time, would have brought out more fully. While Dr. Presson mentioned that pain and discomfort may result from food sensitization, he might perhaps have temphasized the leading part held by pain in the symptom complex. Not infrequently food allergy hurts. Often it is pain in the belly and actual soreness that bring the patient under medical observation. there are abdominal scars—and too many of the older cases have such scars—they serve as a focal point of the pain and tenderness. Many an appendix and many a gallbladder would still be in its original location, without detriment to its owner, if this fact had the recognition it deserves to have.

The other two papers also deal extensively with food allergy, but take somewhat for granted the method of its demonstration. Dr. Piness rightly emphasizes the importance of the personal and family history; it should be gone into minutely, and, while questioning the patient takes time, it should be done by the physician himself and not by a clerk. Almost any other procedure in the hand-ling of a case can better be delegated than the history taking. If the history gives a promising clue, there are two ways of identifying the sus-pected foods. Both Piness and Balyeat rely considerably upon skin tests with extracts of foods. These food tests, while fairly satisfactory in the hands of the expert, are disappointing to the practitioner when he first tries them. In young children, with their limited dietary, a positive response to an offending food is usually frank and typical. Tests continue to be useful up to the age of puberty, but from that time on their reliability decreases

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until in middle age, if any positive reactions can be elicited, the information derived from them is likely to be of historical value only. And this is not necessarily the fault of the extracts used; for the same extracts and the same technic which give a clearly positive test in a sensitive child, may produce only a negative or an atypical reaction in the adult. A negative food test proves nothing; a positive food test must be confirmed by the methods of clinical trial. By the intradermal method, more positive reactions are secured, but some of them are spurious or have no bearing on the symptoms. In short, the making and interpretation of food tests in the adult is a job for the specialist.

But "the proof of the pudding is in the eating," or rather in the NOT eating of it, and the method of elimination diets, described by Albert Rowe in 1928 and now widely used, while slow, is simple and effective. It need not involve any hardship to the patient if he is in a position to control his food supply. Rowe gives a series of set diets, which are varied according to the indications in the individual case. The method consists simply in feeding the patient for ten days or two weeks an adequate, though monotonous, ration made up of a few simple foods, preferably foods to which he is not accustomed. For us who work in the Southwest and whose natients come largely from other sections of the country, it is very easy to find unfamiliar foods. For example, the patient is told that he may have as much as he wants of the following, but absolutely nothing else—and nothing else must be used in preparing the foods. In the way of fruits, he is permitted pears, peaches, and persimmons; he is limited to one cereal, rice or corn or rye. The hest method is to find out which one he has not been accustomed to eating—and this varies a good deal with the part of the country he came frombut wheat is always interdicted at the start. Lamb and mutton are the meats used in the first diet, and, by way of vegetables, two or three of the sort that are not popular, such as beets, carrots, and parsnips, but never tomatoes or potatoes. sort of greens, such as lettuce or spinach, is included. Fats are restricted to mutton fat and pure olive oil, which are really quite enough, and, by way of flavoring, he is allowed sugar, salt, and maple svrun. Plain gelatin is useful in preparing certain dishes. In planning the diet, one naturally excludes one food which the ratient has found repeatedly to disagree with him.

For the first few days no result at all is to be expected from this elimination diet; then, if it contains nothing to which the patient is sensitized, there occurs relief of the symptoms which have been annoving him, and along with this relief a marked euphoria. He feels so much better, not only because he is rid of his distressing abdominal or respiratory manifestations, but because he is free from an allergic toxemia. He may, and usually does, gain weight even on this narrow diet, so that sometimes it is hard to persuade him to amplify it. But it should be amplified, adding one simple food stuff every few days until the offenders are found; and, once they are identified, these offending foods should be left out of the diet for at least a year.

Scveral students of allergy, among them Vaughan, Rowe. Duke. Fyermann, and Balyeat, have found that rensitiration to food is a common cause of herdaches. We are confronted immediately by a difficulty in definition: If the term migraine is to be limited to recurring hemicrania, often accompanied by digestive disturbance, occasionally accompanied by visual disturbance, then most of these headaches that we have been treating in allergic

subjects are not true migraine. There are, moreover, other factors which enter into the production of the periodic disabling headaches under consideration. For one thing, these patients have a certain constitutional makeup: they are highly endowed with the capacity to feel pain; they are capable of great energy output, not necessarily sustained; their sympathetic nervous mechanisms are unstable. Some digestive disturbance usually accompanies the attack. The abnormal physiology seems to consist essentially in a localized disorder of peristalsis so that the bowel current is unevenly slowed, and may even be reversed. In a few cases it has been possible to demonstrate transient changes in the mucosa in the nature of edematous areas, revealed by the barium meal as filling defects; but commonly there can be shown only a localized spasm of the intestinal plain muscle. the block is in the upper bowel, the patient is likely to have bilious vomiting, at the end of which the read pain subsides. If it is in the lower bowel he has to endure a longer period of suffering. Study of the history of these headache patients shows that relief comes only after emptying of the intestinal tract, and if the stasis has been low down they relate that the stools were exceedingly foul.

It can be learned from the patient, or more probably from the members of his family, that the headache sufferer is at times a greedy eater. He either stuffs at table by continuing his meal too long, or he (or more often she) over-indulges in chocolates or the like, between meals. In my own limited experience, it has appeared that many of these allergic headaches (not necessarily true hemicranias) are induced, not only by over-eating, but particularly by over-eating of certain offending foods; these same foods can be taken in moderation without symptoms.

Thus it appears that the action of food sensitization in producing headache is less simple and direct than that which takes place in other allergic manifestations. It seems reasonable to question whether such headaches are not produced by poisonous products absorbed from a bowel which is specifically irritated, rather than by the food stuffs themselves, just as the classical "morning-after" headache results not so much from the alcohol taken as from the intestinal toxemia consequent to a drinking bout which follows a heavy evening meal.

which follows a heavy evening meal.

However, whether the true cause be allergy or gluttony, these headaches yield quite satisfactorily to diet therapy, and the elimination diet offers a rational method of approach in either case. The person on this diet is adequately nourished and not tempted too much by the pleasures of the table.

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## CICATRICIAL STRICTURE OF THE ESOPHAGUS

STEPHEN A. SCHUSTER, M. D. and FRANK P. SCHUSTER, M. D. El Paso, Texas

(Read before the El Paso County Medical Society, El Paso, Texas, Oct. 12, 1931.)

Fibrous or cicatricial stenosis of the esophagus means a narrowing of the lumen by scar tissue. This is always the result of ulceration of the esophagus. Due to the fact food must constantly pass over these ulcerated areas, there is frequently retarded healing, with resulting building up of fibrous tissue which contracts and produces stricture. One of the most frequent causes of this condition, especially in children, is the escharotic action of sodium hydroxide, when swallowed, on the esophageal wall. This chemical is a household article present in cleansing powder, lye, washing powder, and so forth. It is also used in the industries and about the house with calsomining, painting, and plumbing. In former years these common household articles did not have warning labels, but, due to the persistent efforts of the committee on lye legislation of the American Medical Association, a federal law has recently been passed requiring these warning labels. As a consequence, these cases are not as common as formerly, but far too common, because the public still must be educated to the danger. In spite of all the legislative and educational work, children still manage to secure these article; and swallow small amounts, usually with serious and often tragic results. Less frequently, stenosis is produced by other chemicals, such as ammonia, washing soda, bichloride, and acids. Trauma, such as knife and gunshot wounds of the esophagus, syphilitic and tuberculous ulcerations, diphtheria, scarlet fever, typhoid, and occasionally long-retained foreign bodies which produce ulcerations, may be the etiology. Lye causes an actual destruction of tissue. At first the tissues are edematous and swollen, then become ulcerated, form granulations which finally become pale from the invasion of fibrous tissue, which narrow the lumen by constriction. If not properly hand'ed, this may result in complete atresia of the esophagus. tunately, lve stenosis is seldom annular, but eccentric, in character, some portion of the wall being uninvolved.

As to the treatment, the best of course is prophylaxis and the educating of the people to the ever-present danger of swallowing even diluted solutions. Immediate washing out of the mouth, esophagus and stomach with neutralizing solutions minimizes

the danger but is generally ineffective in preventing after results.

Once stenosis begins, it is most important to start the treatment early, to prevent the narrowing of the lumen as far as possible. This is accomplished by dilatation of the stricture with sounds, by various means which I shall attempt to describe briefly in a very interesting case which we have at present.

B. N. W., age 14 months, was apparently a normal child, but had had some gastro-intestinal upsets. In April, 1930, the child was playing in the yard when the mother noted the child gagging and vomiting. An empty can of lye which had been partially filled by rainwater was discovered near where the child had been playing, and the possibility of lye burn was advanced. The child's mouth, throat, esophagus, and stomach, were washed out at once with vinegar, by a local doctor, and the child sent to Dr. Leigh at the Masonic Hospital. Dr. Leigh noted slight burns on the lips and mouth. The mouth, esophagus, and stomach, were again washed cut with vinegar solution, no difficulty being noted in passing of a tube of fairly large caliber. The child was observed for a day or two and then sent home. The family physician placed the child on a diet rather high in fat content, and after a few weeks the child began to vomit. She was again returned to Masonic Hospital, where it was noted that she could take milk, orange juice, and graham crackers, but for a period of six days tried to vomit any food given. On May 12, barium meal was given and it was noted that it passed into the stomach promptly, with no stricture present. The child was dismissed from the hospital with a diagnosis of anorexia nervosa secondary to shock of ingestion of lye solution. When the child returned home it became sullen, would not play, and had to be urged to take food, which passed without difficulty. At other times, food would be regurgitated and vomited. The child frequently induced vomiting by sticking its finger into the throat. The child's behavior was that of a mental case, which appeared to be worse in the presence of the parents. For this reason, Dr. Leigh insisted on placing the child in the Cloudcroft Baby Sanatorium, away from the parents. Before going, on July 1, esophagoscopy was cone, superficial scars were noted in the hypo-pharynx and some whitish areas in the esophagus extending about halfway to the cardia, but no stricture. In the sanatorium, the child made remarktble progress, gaining weight, apparently had no difficulty in swallowing but still presented mental symptoms. It stood for hours in its crib with a vacant stare, would not notice people or other children in the room, and at times would refuse food and water for long periods, although the food when taken apparently passed normally. When the child returned home, in the fall, to the parents, it again began its vomiting.

On December 18, 1930, about eight months after swallo ving the lye, examination showed a marked constriction just below the sternal notch, with the urner portion of the esophagus beginning to dilate. This was noted on fluoroscopy with barium meal.

This was noted on fluoroscopy with barium meal. The child was taken to the Mayo Clinic, where these findings were verified. Treatment was then initiated, which we have continued to the present. Finding the stricture up to French-37, and this will be continued un to F-45. The child can swallow all food without difficulty and the mental symptoms have disappeared. When the treatment was started, the child could swallow small amounts of water at a time, and milk when taken slowly, but even

milk would at times cause obstruction. First, let us say that one of the main difficulties was the age of the child. Blind bouginage was absolutely contraindicated because, the stricture usually being eccentric, perforation is almost certain, not through the cicatrized area but through the normal esophageal wall.

In the Jackson Clinic, dilatation is done under direct vision through the  $\epsilon$ sophagoscope but even this is not without considerable danger, since the strictures are usually multiple and the second stricture difficult or impossible to see. A safer way is by passing a sound guided through the strictures by a thread or string. This is at times done under the guidance also of direct vision through the esophagoscope. The difficulty here is to get the thread down through the stricture. Dr. B. W. Sippy, in his lectures on this condition, always maintained that if water would trickle through the stricture, then a thread could get through, and it is certainly true that by persistence this can be accomplished in almost every case. Once the thread is through, the biggest part of our troubles are over, because, with the thread as a guide for the sound, we can dilate the stricture under ordinary circumstances with little danger of perforation. In the early cases gastrotomy was done, the string removed through the stomach wall and fastened so that tension could be put on it to guide the sound. It was soon found, however, that if sufficient amount of string is allowed to pass into the intestines, and even at times c'ear through the intestinal tract, tension can be placed on the string at the mouth sufficient to pass the sound without the necessity of gastrotomy. In the present case we have used sounds devised by Palmer. The stricture is now dilated to F-37. We shall not attempt to dilate the lumen to its normal size, only attempt to get a functional cure. The dilatations were made at first once a week and at present are carried out once every two weeks, and, as the tendency to contraction diminishes, the length of time between sounding will be lengthened. case will be kept under observation for a considerable period of time.

The principle difficulty in these cases is getting 'the string through the stricture. Vinson and Moersch, at the Mayo Clinic, have advocated the use of the silk thread, which, they claim, can be swallowed and passed through a stricture much more easily than a linen thread, and the thread must be twisted and not braided. The thread must be swallowed slowly so as not to accumulate in a knot about the stricture, for then it would fail to pass. The child is induced to swallow the thread in soft or semi-solid foods, such as ice-cream, cereals, and so forth, and then the spool of thread is tied in a handker-

chief and pinned to the back, so that it feeds out slowly as the thread passes through the gastrointestinal tract.

When sounding is done, the thread is cut and threaded over the sound, dilatation is done without anesthetic and the thread retied afterwards. The thread can be kept in for a long period of time. Where dilatations are two weeks apart, it is generally allowed to pass and the thread re-swallowed for the next dilatation.

In conclusion, we wish to point out the danger, especially to children, from ingesting many common household articles, that stricture from lye burns may develop many months following these burns. A child with this history should be watched over a long period of time. Attention is called to the importance of details in swallowing of the string and, once this is through, the major portion of our difficulty is over.

## CASE REPORT OF CHOREA GRAVIDARUM

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(Read before the El Paso County Medical Society, El Paso, Texas, September 28, 1931.)

The object of this paper is to present a case of pregnancy complicated by acute chorea, in the hope that the gravity of cases of a similar character may be recognized earlier and more effective treatment pursued.

Acute chorea may be defined as an acute infectious disease, characterized by involuntary coarse muscular twitching, psychical changes, and a propensity to endocarditis and polyarthritis.

The exciting cause is thought by many to be a non-hemolytic streptococcus, which produces toxin, and, by its action on the brain and basal ganglia, produces the symptoms characteristic of the disease. The disease is seen more frequently in children, and rarely in adults, except during pregnancy, which predisposes to it and favors a relapse in women who have had the disease previously. The attacks usually occur in young primipara about the first three months of gestation. It occurs more frequently in girls, and also is seen more in summer and spring months. Heredity is a predisposing cause. Rheumatism is not a cause, but rather a manifestation of the multiple symptom complex (rheumatism, endocarditis, and chorea).

The pathology is a low-grade meningo-encephalitis, which is thought to be so localized in the basal ganglion that it produces the specific movements. There is also congestion and hyperemia of the brain and meninges. Emboli are frequently found in the brain and probably originate from the endocarditis.

These emboli are not the cause of the specific movements, however.

The cardinal symptoms are choreic movements—which are spontaneous, irregular, involuntary jerks and twitches of various parts of the body,—various psychic changes, ataxia and weakness, the patient being unable to maintain a tonic muscular contraction.

The disease must be differentiated from hysteria, tic, or habit spasm, epidemic encephalitis, senile chorea, Huntington's chorea Friedreich's ataxia, and various intoxications.

CASE

E. L., Mexican, 19 years of age, was seen by Dr. S. H. Newman, July 19, 1931. She was pregnant, had twitching movements of the left side of the face

and all limbs, and had a sore tongue.

Present Illness: The abnormal movements began one week ago. These were not very pronounced at first and she was able to sit fairly still in a chair. They continued to get worse, however. She also complained of a sore tongue of one week's duration. Appetite fair. Sleeps fairly well. Has always been troubled with constipation.

Personal History: Usual diseases of childhood. In December, 1925, was seen by Dr. Newman for choreiform movements in right arm and leg, more marked in her hand. Her mother stated then that she had been having chorea since May, which she attributed to a fall received in April. She was given treatment and was not seen again until January, 1927, when she returned to Dr. Newman and said her first attack had disappeared in a few weeks, and at present she was feeling nervous and a little jerky, as if the chorea was returning. She had been this way for three or four days. He again prescribed for her and did not see her until July, 1931. She said that her spell in 1927 lasted only a few weeks and was very mild. The patient states that she never had rheumatism.

Menses started in June, 1925, when she was 13 years of age. This was about the time she had her first attack of chorea. Has always been normal. The last period was October 27, 1930. This was her second pregnancy, the first one terminating at six months, about a year and a half previous. At this time she had a mild attack of chorea, from which she recovered immediately after the premature la-

Examination: Reveals a well-developed and nourished young female not acutely ill, sitting quietly in a chair, with a few choreiform movements of left arm. leg and face. Mental state clear. Temperature 99.4°, pulse 120, blood pressure 120 80. Head negative. Tongue shows two small, one-eighth inch, deepseated, very painful ulcers on the dorsal surface near the tip. Chest clear. Heart: rapid rate, regular rhythm, sounds appear distant. No murmurs could be heard, no thrills or shock on palpation. On percussion, no enlargement. Abdomen: about nine months pregnant, fetal heart sounds 130, postion vertex l.o.a. No neurological findings except the choreiform movements and exaggerated reflexes. Laboratory: urine negative for albumin and sugar, few epithelial cells, and amorphous sediment.

Prognosis and Treatment: At the time of the examination, the patient was given potassium citrate and elixir of luminal. She was seen two days later by Dr. Newman, who found her worse. The muscular twitchings were more pronounced in the left arm and leg, and the tongue was now involved. and she could hardly eat or talk on account of not being able to control it. All these movements stopped when she was asleep (but she could not sleep much) and were exaggerated by effort or excitement. The

tongue had also developed several other small ulcers. She was given capsules of sodium amytal to repeat as required, and also calcium. The sodium amytal would quiet her for only two or three hours and then she would wake up worse than ever, with a semi-delirium superimposed. The next day she was decidedly worse, it being necessary to put her on the floor, as she would not stay in bed, and have a person at each limb to hold her down. She was conscious, but unable to talk. Temperature, 102; pulse, 140. She was given % grain of morphine by hypo, and hospitalization advised at this time for the purpose of emptying the uterus by cesarian section, if necessary. The family refused and called another doctor, who mistook her condition for hysteria. He gave her a dose of apomorphine, which caused her to go to sleep but did not produce vomiting, and told the family when she wakened she would be all right. She woke up in about two hours, however, worse than ever. Dr. Rawlings was then called in. He recognized her condition and gave her 1 100 of scopolamine. She was having uterine contractions at this time, which was about 3 p.m. He and Dr. Newman told the family she would have to be taken to the hospital and delivered.

I saw the patient at the hospital at 6 p. m. She was very wild, and it was necessary for several persons to hold her in bed. She was given 1/150 of scopolamine, which quieted her for about one and one half hours. Then she became uncontrollable again and I decided to deliver her immediately, if possible, and, if not, to put in a bag and wait a little longer. The uterine contractions, which had been coming every four or five minutes, now came every fifteen or twenty minutes, and were not very strong. The fetal heart sounds were around two hundred. She was given a light ether anesthetic and examination showed the cervix three fingers dilated, very thin; so it was manually dilated, and podalic version and extraction done. Had a slight tear in the cervix which was sutured and mercurochrome pack put in the cervix. One cubic centimeter of pituitrin given, followed by 1 cc. of ergotole every four hours. The patient was returned to the room and when she came out from the anesthetic was wilder and more uncontrollable than ever. This continued the fore part of the night, then she began to get weaker, failing to respond to any stimulation, and died the next morning at 9:15, her temperature going to 107 by axilla and pulse to 200 just before she died. The baby was 8½ months, did not cry vigorously when born, but the color and respiration were good. Was seen a few days ago and was doing nicely.

DeLee says that chorea occurring during pregnancy is in all probability toxemic or infectious in origin and that it usually appears before the middle of pregnancy, rarely in labor, and still more seldom after. It lasts from eight days to a month, disappearing, as a rule, with the expulsion of the ovum, whether spontaneous or induced. Twenty to thirty per cent mortality.

Buist collected 255 cases of chorea complicating pregnancy, with a mortality of 17.5 per cent. French and Hicks, in 1906, reported 29 cases, with a mortality of 10 per cent. They are skeptical as to the value of premature labor. Albrecht holds that the condition is usually toxemic in origin, and reports cures promptly follow the intravenous injection of 20 cc. of blood serum from a normally pregnant woman.

### CONCLUSION

We might conclude from the rapid development of several symptoms and the fatal termination of this case that it will pay us not to temporize with even apparently mild cases of chorea complicating pregnancy in the latter months.

### BIBLIOGRAPHY

Cecil: Textbook of Medicine, p. 1373, 1379.
 Blumer: Bedside Diagnosis, Vol. III., p. 669, 671.

3. Wechsler: Clinical Neurology, p. 531, 536.

4. Williams: Obstetrics, p. 567.

5. DeLee: Obstetrics.

# HYPERTENSION—ETIOLOGY AND PROGNOSTIC TESTS

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(Read before El Paso County Medical Society, October 26, 1931.)

Anything that tends to decrease the lumen of the vascular bed, or to interfere with its elasticity, or to increase the peripheral resistance, usually raises the tension within that bed. Weiss and Ellis found that the peripheral resistance of the arterioles of the general circulation, measured quantitatively, was twice as high in a group with hypertension as in a normal control group.

The change in lumen may be more or less restricted to a certain organ or area, as in the case of the renal type of hypertension; it may involve practically the entire vascular tube, as in a general arteriosclerosis; both of which cause varying degrees of elevated pressure ordinarily. In the senile type, however, usualy involving the larger vessels, the blood pressure may be within normal limits. Hypertension may also be of that obscure type, probably the most common and least understood, usually known as essential or benign hypertension, or hyperpiesia, in contradistinction to the arteriosclerotic type. A fourth type of hypertension is sometimes mentioned, the accidental, associated with some types of heart lesions.

Much speculation, experimentation, and theorizing, has not as yet produced any definite solution to the problem of causation of hypertension. In the renal sclerotic type, definite pathological changes are found in the renal vessels and the elevated pressure is probably compensatory, to force the blood through the narrowed vessels, and the same is true to a lesser degree of the general arteriosclerotic type, especially when there is considerable involvement of the smaller ves-In the essential type, no definite demonstrable changes are found in the blood vessels, but there is evidence that it is dependent upon a vaso-constriction of the arterioles and many agree that, if a high pressure be maintained over a considerable period, a benign type will in many instances lead to a secondary sclerosis. Some, notably Fishberg, consider essential hypertension not as a separate entity, but as a form of renal arteriolitis and, therefore, a renal hypertension.

The possibility of some chemical substance in the blood affecting the vessels and causing elevated pressure has received attention for a number of years. Westphal and others consider increased cholesterol content of the blood, producing changes in the osmotic tension of the capillaries, as the factor in hypertension, but Weiss and Weinstein are convinced, after experimentation in seventyfive cases, that hypercholesteremia plays no part in the etiology. The same authors disprove the theory that increased constriction is due to altered function of the autonomic nervous system, this function being accompanied by increase in the potassium content of the blood and decrease in the calcium, as offered by several German investigators and Reed, Mathison, and others, in this country.

Dale, Dixon, and several others, have offered the view that guanidine or a derivative causes increased arterial tension, but this lacks definite confirmation.

High protein diet has, from practically the time of first knowledge of hypertension, been considered as a responsible factor, as has high sodium chloride intake, but Mosenthal, in particular, among the numerous investigators of this theory, has proved that high protein is not a factor, while several others have not been able to confirm the sodium chloride theory. It is significant to note that explorers have lived on a high meat diet over considerable periods of time without showing any evidence of arterial degeneration.

Other theories are those of increased viscosity of the blood, intestinal autointoxication, and focal infections. In support of increased viscosity, there is no confirmatory evidence and against it is the fact than no change in the viscosity has been demonstrated in essential hypertension. The toxic split-protein products from the intestine are for the most part destroyed in the liver and, while the undestroyed portions that do reach the general circulation, are generally credited with causing a variety of disturbances, there is as yet no evidence that they cause any degenerative lesions of the blood vessels.

Focal infections remain the by-word of the medical profession, and it is well known that they cause various disturbances in even remote parts of the body. However, there is nothing to indicate that there is any direct effect on the arterial system. It is possible that an increased pressure may be produced through the medium of a renal damage that

can be traced to an infective focus. Possibly future invertigation may establish a connection between such a focus and a sclerotic artery. Certainly, it cannot be said that all cases of hypertension have an infection in some part.

Disturbance of endocrine balance or, possibly, entire dysfunction of an endocrine organ, as manifested by the rather frequent association of hypertension with the menopause, is a field that has received considerable investigation without, as yet, any definite and conclusive evidence of association with hypertension. Endocrinology, as yet very much in its infancy, offers, in my opinion, one of the best possibilities and perhaps when this subject is more thoroughly understood, it may develop that some pressor substance, secreted particularly by the adrenals, when not controlled by a counter secretion, may be the causative factor in essential hypertension.

Mention may be made of such possible factors as infectious diseases and syphilis. Thayer has found that a rather large percentage of hypertension cases give a history of previous typhoid, and the possible effect of syphilis upon the circulatory system, especially the aorta, is well known.

Age, per se, cannot be considered as a factor, for, while it is true that the incidence of degenerative lesions of the circulatory system is greater at the advanced ages, it is also true that sclerotic changes may be found at any age; in fact, cases have been reported in children.

Stress and strain undoubtedly have considerable influence, especially in this day of keen competition, hard application to work, and little relaxation. Degenerative diseases of the circulatory system are definitely on the increase and, while this may be partially explained by more accurate diagnosis, it is probably true that the burden is borne by the arteries, especially in those whose heritage is an early tendency to arterial changes. The hereditary tendency to early arterial hypertension seen in some families, on careful inquiry seems unquestionable. This constitutional predisposition not only consists of structural changes, but is frequently manifested by psychic disturbances, as hypersensitivity, inclination to worry, phobias, and the like. I have in mind one family no male member of which has lived beyond the age of fifty-five in three generations, all deaths being due to diseases of the cardiorenal system and all showing an early tendency to elevated blood pressure.

Hypertension sometimes appears as a part of the syndrome of poisoning by certain chemicals and metals, notably lead, and the frequent association with obesity is striking.

Numerous other causative factors have been theoretically offered, but these have not been established. The etiology of hypertension is complex and, as yet, no single operative factor of the numerous ones proposed can be made responsible. It is important, however, both from the standpoint of therapy and prognosis, that a search be made for possible etiological factors and proper valuation be placed upon them.

It is generally understood that any marked and constant increase in the blood pressure above the average accepted for any age, reduces the life expectancy for that age. The experience of life insurance companies, with their masses of statistics, bears this out. In general, these statistics indicate that tensions of plus twenty-four for a given age show a mortality of seventy per cent above the expected, and the increase in mortality rises in proportion to the abnormal tension. This does not necessarily mean, however, that in individual cases increased pressure is not compatible with longevity. The insurance statistics cover large groups, with no attention paid to individuals, with which physicians are called upon to deal. In looking forward to what may be expected in any given case, there are so many factors involved that prognostication remains a difficult problem.

The condition of the kidneys and heart; the temperament of the individual; the age, it being known that at the higher ages elevated blood pressure is better borne than at the lower; the duration of the hypertension, often difficult to estimate; the condition of the arteries; the variability of the pressure and the height of the diastolic pressure; all bear important relations to the prognosis. With a marked sclerosis, the diastolic pressure, a measure of peripheral resistance, is relatively fixed and unvariable; while, in the purely spastic stage, this pressure is variable. Signs of myocardial change make for a bad prognosis, while, in general, a lowered renal reserve is ominous. All these factors can be worked out by clinical and laboratory methods but recently two tests have been offered by which the degree of sclerosis or vascular damage can be quickly estimated.

Grimes has recently shown that, when a forced expiration is made with the air exit closed, the blood pressure drops, and, when breathing is resumed, there is a marked elevation of the pressure. This, he explains, is due to the fact that normally the intrathoracic pressure never exceeds the intraabdominal but, when the forced expiration is made with the exit closed, the intrathoracic pressure is increased, the blood thereby be-

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ing dammed back from the heart. When breathing is resumed, the heart and arteries are suddenly overloaded, causing a sudden wave of arterial tension. When this rebound does not exceed twenty-five or go beyond the individual's pressure at rest, it is considered normal, but pressures rising to seventy-five or more are abnormal, the high rebound being due to diminished elasticity of the arterial walls. In a series of one hundred cases with high rebound compared with one hundred normals observed over a period of several years, it was found that the series with high rebound showed a mortality of thirty-two per cent as compared with twelve per cent in the normal, the higher mortality being due to renal or vascular failure. He observes that this test is a positive measure of arterial elasticity and a high rebound is an indication of arterial fibrosis.

Stieglitz has also recently reported an amyl nitrite test to determine the degree of relaxability of the arterial walls, as an aid to prognosis and as a denominator of the degree of vascular disease. "Spasticity and hypertonicity," he says, "early phenomena of the progressive disease, are amenable to treatment," and cases encountered in this stage offer a relatively good prognosis, while, if sclerosis is present, the change is permanent, not so amenable to treatment, and with a less hopeful prognosis.

To apply this test, the individual's pressure is determined as accurately as possible, after which the contents of one pearl of amyl nitrite are inhaled deeply three or four times. When the maximum effect is reached, mani-

fested by flushing of the face, a sense of fullness in the head or vertigo, the blood pressure is rapidly determined two or three times, after which the disagreeable effect can be lessened by the use of aromatic spirits of ammonia. The fall of the systolic is noted, but of more importance is the degree with which the diastolic approaches the normal. This percentage of the approach of the diastolic to the normal measures the degree of resistance, or, indirectly, the degree of sclerosis.

To determine the effectiveness of the Stieglitz test I have, during the past seven months, applied it to twenty-seven cases of hypertension of various classes with results as indicated in the accompanying chart. To rule out possible extraneous influences and to determine the pressure as accurately as possible, that given under the heading "Before Test" is an average of at least four readings on different days, while the pressure given under the heading "Later Results" is an average of all determinations made during the period of observation designated as "Elapsed Time."

In this series the wrong estimate was made in two cases, a higher percentage of error than in the series reported by Stieglitz. This may be, at least partially, accounted for by the lesser degree of skill in interpretation. In general, however, these results correspond rather closely with his, especially with regard to the poor type of response in those cases showing a low renal reserve as determined by the inability of the kidneys to concentrate the urine on deprivation of fluids.

							COC UIIC	drine on deprivation of maids.
		В. Р.	Percentage	Estimated		Elapsed	1	
	В. Р.		Diastolic	Degree		Time	В. Р.	
	Before	Amyl	to	of		Since		
Sex	Age Test	Nitrite		Sclerosis	Prognosia		Later	
	43 184/116			0	Good	Test 10 mo.	Results	Comments
F.	65 194/112			+ +	Poor		$\frac{128}{90}$	II
F.	41 200/112		70	+	Good	8 mo.	200/106	Has diabetes.
M.	72 220/118			+ + +	Poor	11 mo.	200/100	Prognosis Incorrect.
F.	67 190/ 98			0	Good	5 mo.	200/108	Low renal reserve. Died cerebral hemmorrhage
M.	59 180/112			+	Good		170/ 82	
F.	48 172/106			ó	Good	6 mo.	120/102	Prognosis Incorrect. Probably has Aortitis.
F.	52 240/130		60	+ +	Fair	12 mo.	160/ 84	Has attacks severe migraine.
M.	51 188/104		20	+ + +	Poor		160/ 94	G . L'II' D'I / I
M.	78 210/120			+++	Poor	6 mo.	174/100	Syphilis. Dilated aorta.
M.	58 200/122			0	Good	3 mo.	144/108	Has diabetes.
M.	46 184/114		90	ő	Good	7 mo.	140/ 94	Occasional Anginal attacks.
M.	31 162/100		80	0	Good	10 mo.	144/ 90	Pul. T. B. 15 years ago.
F.	74 190/ 98			+		8 mo.	128. 88	Inactive syphilis.
M.	52 190/120			+'+	Good	8 mo.	154/ 00	Has angina on effort.
F.	68 200/110		25	+ + +	Fair		154/ 98	Obese.
M.	69 220/130			+++	Poor	10 mo.	180/106	Obese. Enlargement heart.
M.	43 170/ 98			0	$egin{array}{c} \operatorname{Poor} & & \\ \operatorname{Good} & & & \end{array}$	6 mo.	$\frac{200}{130}$	Died of cerebral hemorrhage.
M.	76 200/108			+ + +	Poor			T 1
F.	67 170/116		30	+ + +	Poor	3 mo.		Low renal reserve.
F.	68 172/ 96		100	0	Good	6 mo.	$\frac{160}{112}$	Toxic Goitre.
M.	46 260/150		10	+ + +	Poor	11 mo. 4 mo.		Law yand wasawa D' L . I' 6 '1
F.	71 280/130			+ + +	Poor	6 mo.	200/140	Low renal reserve. Died cardiac failure. Low renal reserve.
M.	42 230/130			+++	Fair			
M.	63 190/100			0	Gcod	8 mo. 5 mo.	$\frac{184}{90}$	Occasional Angina.
M.	25 160/100		80	0	Good	10 mo.	128/ 86	
	69 174/112			0	Good			
747 .	00 114/112	144/ 00	100	V	Good	1 mo.	130/84	

This is well illustrated by case number 4, a brief resume of which is as follows.

Male, age 72, watchman, seen first January 6, 1931, and giving a history of attacks of paroxysmal tachycardia for several years previous. Chief complaints, dyspnea, vertigo, and tachycardia, not severe enough to interfere with his work. Maximum specific gravity of urine 1.010 on twelve hours' deprivation of fluids. Given amyl nitrite test on January 12th, five previous readings having determined his average pressure as 220/118. The fall of the diastolic was slight, indicating marked sclerosis and without much hope from therapy. On June 19, 1931, while in bed, suddenly became unconscious and paralyzed on left side. Died June 21st, evidently from cerebral hemorrage.

In contrast is case number 1 as follows.

Male, age 43, clerk, seen first December 19, 1930, giving a history of having been declined for insurance because of high blood pressure. Occasional vertigo for three years. Overweight 25 pounds. Hard worker. Little exercise. Urine maximum specific gravity on 12 hours' deprivation of fluids was 1.032. Four readings established blood pressure average as 184/116, which, on inhaling amyl nitrite on December 26th, fell to 132/88, indicating little or no sclerosis. Placed on reduction diet, moderate exercise, and less application to work. Ten months later his weight is practically normal, there has been no further dizzin ss, feels better than in years and average blood pressure is 128/90.

and average blood pressure is 128/90.

Case number 7 is interesting from the standpoint of a possible allergic factor.

This case, a female, age 48, was first seen on September 5, 1930, and gave a history of hypertension of four years' duration, and severe attacks of headache accompanied by nausea and vomiting. The blood pressure was always higher during the headache attacks, on one occasion being 200/108 with an average of 172/106. There was a marked fall, to 120/82, on inhaling amyl nitrite, and a favorable prognosis was indicated. Skin test for egg protein was strongly positive and diet arrangement with elimination of eggs has resulted in a marked amelioration of the headaches and a practically constantly normal blood pressure. Sodium sulphocyanate was given during the early period of observation, but there has been no medication of any sort for the past nine months.

The terms "elevated blood pressure" and "increased vascular resistance" are frequently used interchangeably and the height of pressure, particularly the diastolic, has been used as an index of this resistance. This, how ever, gives no idea as to whether the resistance is due to a spasticity alone or whether actual sclerosis is present. Case number 12 gave a preliminary average blood pressure of 184-114, with very little diastolic variation on five readings, and with this as a criterion the suspicion would be that considerable arterial change was probably present. testing, the pressure fell to practically normal, indicating that no sclerosis was present, and that therapy should be effective. Later results seem to bear this out.

The individual prognosis in hypertension, being dependent upon so many factors, is difficult to estimate. A knowledge of the stage of the disease, whether or not sclerosis is present, is of considerable importance in an evaluation and, although partial error is to be expected, the Stieglitz amyl-nitrite test seems a fairly reliable method for quickly determining the relaxability of the vascular walls and thereby giving, indirectly, an estimation of the presence or absence of sclerosis and the degree, if present.

### REFERENCES

Weiss, S., and Ellis, L. B.: American Heart Journal, May, 1930.

Weiss, S., and Weinstein, A. A.: Archives Inter-

nal Medicine, Sept., 1931. Stieglitz, E. J.: Archives Internal Medicine, August, 1930.

Grimes, E.: Archives Internal Medicine, June, 1931.

Riesman, D.: Journal American Medical Association. April, 1931.

Tice: Practice of Medicine. Cecil: Text Book of Medicine.

### INTESTINAL OBSTRUCTION

F. P. MILLER, M. D. El Paso, Texas

(Read before El Paso County Medical Society, November 9, 1931.)

Aside from the symptoms accompanying a strangulated hernia, I have never been satisfied with my ability to make an early diagnosis of intestinal obstruction. I do not feel that we have enough papers on this important condition. In my opinion, no condition demands from internist and surgeon more sk'll and prompt action than the acute abdominal diseases.

When locating inflammatory lesions in the abdomen, the surgeon should rely upon his knowledge of anatomy. In the diagnosis of obstruction, his knowledge of physiology should have full sway.

As a rule, intestinal obstruction is the acute termination of a chronic disease, as the strangulation of a hernia or an obstruction due to a malignant disease. It is rarely an acute, new disease process.

The symptoms of acute intestinal obstruction are dependent upon many factors. It frequently happens that these factors change from time to time, and the physician can be misled by these changes. The history as to the onset of symptoms is important, but can seldom be relied upon, because of the difference in capacity of individuals to relate the details in proper sequence.

The general appearance of the patient with an intestinal obstruction is deceptive in the early stage. He often appears to have some minor gastric upset.

Cope states that, "The general rule can be laid down that the majority of severe abdominal pains which ensue in patients who have been previously well, and which last as long as six hours, are caused by conditions needing surgical intervention."

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In all cases of obstruction, there is an attempt on the part of the intestine to overcome the obstruction by increase in muscular This results in cramp-like pain, activity. one of the earliest, and one of the most important, symptoms. The pain has a sudden onset, and is located in the region of the umbilicus or upper abdomen. It is usually intermittent. Frequently, the patient will want to explain and treat the condition for some error in diet. He will have used enemata, taken salts or oil, and used a hotwater bag. Vomiting soon follows, the time of its onset depending upon the location of the obstruction. Where the obstruction is low in the ileum or colon, the vomiting and other symptoms will develop more slowly; where high in the tract, as the duodenum, thrse symptoms appear early. The vomiting increases in frequency as time passes, and is aggravated by the administration of oil or salts. At first, the vomited material consists of stomach contents, then of bilestained fluids; still later, the vomitus is brown fecal matter, with the characteristic odor. The diagnosis should be made before the appearance of fecal vomiting.

A classic description records peristaltic waves visible through the abdominal wall, but my cases, in most instances, have failed to reveal this sign. Upon one occasion, a consultant demonstrated these peristaltic movements to my satisfaction after a close observation for twenty minutes. My advice is to observe the abdomen for a long interval before recording "no visible peristalsis found."

Abdominal distention will be present in all cases. This symptom may develop late. In the obese patient, palpation of the abdomen seldom reveals anything of definite value. Tenderness may accompany the distention. Scars from previous operations should have great consideration, as to the possibilities of adhesions and bands being the cause of the obstruction.

A mass may be felt in children where intussusception is the cause of obstruction. Here the pain is more apt to be constant and the stools bloody.

Auscultation of the abdomen should never be neglected. The presence of borborygmus can be detected in most cases of obstruction, and will be absent in many other acute cases requiring differential diagnosis, as in acute cholecystitis and in adynamic ileus.

If vomiting continues, there will be great loss of fluids, or dehydration, with decreased chorides. The resultant condition we know as alkalosis. As interference to the blood supply of the bowel increases, there is added the factor of toxemia.

In acute intestinal obstruction, obstipation cannot be relied upon. It is often lacking. Enemata will frequently produce one or two actions, with the passage of gas. This has often been accepted as evidence that obstruction does not exist.

The x-ray finding of multiple fluid levels, overlaid with gas, is pathognomonic of intestinal obstruction. Such examination, however, can seldom be made before the patient enters the hospital.

In differential diagnosis, nearly all abdominal lesions must be considered. The list is a long one in most text-books.

During the past year, I have seen two cases of intestinal obstruction due to large ga'lstones in the ileum. My experience includes one case following a ventro-suspension of the uterus. Dr. M. O. Wright found one case of obstruction due to long, fibrous bands or threads, developed from an unsuspected tuberculous peritonitis.

It is desirable, but not essential, to know the exact cause of the obstruction. Even if symptoms are indefinite, it is an act of wisdom to consider the possibility of obstruction, and to know that safety lies in early surgical intervention.

Morphine does more harm than good in a serious abdominal disease. To suspect an obstruction and yet leave the question open for ten or twelve hours, obscured by a narco-

tic, is to gamble with a life.

Spinal anesthesia is growing in favor. Its chief advantages are three: First, the difficulty which the surgeon encounters in forcing distended colon and ileum back into the wound is eliminated by this method; second, blocking the spinal nerves decreases shock, and for the patient already in toxemia, added shock is frequently a factor in tipping the scales in the wrong direction; third, by blockage of the inhibitory nerves to intestinal musculature, spinal anesthesia increases peristalsis and eliminates the possibility of postoperative ileus.

I frequently employ a high enterostomy with a Wetzel tube, and believe it to be a

life-saving measure.

Much has been accomplished by preoperative and postoperative treatment. No matter how promptly and accurately diagnosis is made, nor how skillful the operation, these factors will be discounted by lack of postoperative care. Administration of normal saline by intravenous or subcutaneous route, in large amounts, frequently repeated, is advocated by most surgeons. Gastric lavage is of extreme importance. In my opinion, eserine, given in doses of 1.50 to 1/100 grain, repeated every three to four hours, is the best stimulant to unstriated muscle, and therefore, combats post-operative ileus.

# THE EPIDEMIOLOGY OF CEREBRO-SPINAL FEVER

R. J. STROUD, M. D. Tempe, Arizona

(Read before the Maricopa County Medical Society at Phoenix, Feb. 23, 1931.)

Synonyms: Meningococcic Infection

(a) Epidemic cerebrospinal meningitis.

(b) Posterior basic meningitis.

Meningococcic Meningitis.

The first undoubted account of the disease is of an outbreak at Geneva in 1805 reported by Vieusseaux. In 1806, five necropsies were done following a description of the disease with an epidemic at Medfield, Mass., by Danieson and Mann. These men were ignorant of the Geneva outbreak. The disease persisted in New England until 1816, and was investigated by the Massachusetts Medical Society. The Prussian army was attacked, 1806 and 1807. In Britain, Alexander Monro described the disease, calling it posterior basic meningitis; but the first postmortem confirmation was in 1830, by Sunderland.

The disease no doubt existed before 1805 but was confused with epidemics of typhus and other malignant fevers. Some of this typhus, so-called, must have been meningitis. (The first case reported by a physician in the Coldwater district in the present outbreak was described by him as possible typhus.)

Four periods are described between this first description and the Boston outbreak in 1897: 1805 to 1830; 1837 to 1850; 1854 to 1874 and 1876 to 1882. New York suffered in 1904 and 1905, and Texas in 1912. Portugal had a tremendous outbreak in 1901 to 1903; France in 1909 and 1910; and Silesia, 1995 to 1907. During the world war, the congestion of men in training camps accounted for an increase of the trouble. In England and Wales, in 1914 there were 300 cases and 206 deaths. In 1915 there were 2,343 cases and in 1916, there were 1278, and so on, with a mortality of 65 per cent. It is not a disease of the open warfare camps. While it attracts attention during epidemics, it is always smouldering in endemic form, with chronic carriers responsible for the incidence. After sporadic cases become more frequent, there is a very fine dividing line between a real epidemic and an increased number of cases which may be only sporadic.

Arizona has had two periods of heavy infection, in Maricopa and Gila Counties in 1929 and 1930. In Maricopa County, it died down, as do most epidemics, in about six months; in Gila county, it had two waves, one in the winter and another in the middle of summer

when there should have been a dying down of the disease. Prompt measures to find carriers and to keep contacts under quarantine is the only way to stop an epidemic. To shut down schools, churches, and any other gatherings, does not help, for contact with carriers goes on. In Graham county, the State Board of Health opened schools and churches, found four main sources of spread, quarantined the suspects until two negative cultures were obtained forty-eight hours apart, and the disease stopped, except for sporadic cases, immediately. This year, Gila county has had some cases at Christmas, all located in overcrowded cold shacks and confined to five or six families. None have been reported last week as the cases and contacts were removed to the detention hospital supported by the county. Of the 43 contacts located, 36 proved carriers at the first test.

Maricopa county, beginning in December, has had some cases. One group was in Chandler, where the contacts in December were not cultured; another group was at Coldwater, and another in Phoenix, which, from the location, must be from the same group of carriers. The two Scottsdale cases were no doubt from the same focus as the Phoenix cases, as they visited Phoenix five days before the disease manifested itself. close contacts showed negative cultures and there has been no spread in that locality. Fourteen cases were reported in January, 1931, from Maricopa, 23 for the state as compared with 46 cases in 1929 and 57 in . 1930.

The character of the disease varies. This year the mortality has been very great. The septicemic rashes and other manifestations vary. In the world war, Dopter observed that the type changed from his type A to B, or from Gordon's types 1 and 3 to Gordon's types 2 and 4, septicemic cases becoming more frequent.

The time of the year most advantageous to the organism seems to be the first six months, when it is colder, or a sudden increase in humidity, or when smoke and dust make for frequent coughing. This is disputed by some, but has proved true in Arizona except for the Miami outbreak, with a secondary incidence in summer. There is no doubt that overcrowding is the main cause of the beginning of the spread. Overfatigue is a cause, as well as epidemics of influenza, which both precedes and follows meningitis. The usual age is below five years, which has not been borne out by Arizona epidemics.

Coryza, by adding to the sneeze and cough reflex, may spread the disease, but the

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extra secretion in the nasal cavity seems to be protective. A carrier with a cold and not susceptible himself would be a menace. Adenoidal tissue seems to be a factor in carriers and Clemson found 50 per cent more adenoidal tissues in most carriers.

Animals do not get the disease, and, as the organism is fragile outside of its habitat in the nasopharynx, there is little danger of mediate bodies or domestic pets carrying the disease. The process is from throat to throat, by droplets. Very seldom can the disease be traced from case to case except in the same family, and then a common carrier may have been responsible. Carriers are from 10 to 20 times commoner than the cases. When carriers go above 20 per cent an outbroeak will undoubtedly occur. The disease is of very low infectivity, else we should all have succumbed long ago. Chronic carriers are the real cause of the continuance of the disease. Casual contacts who are carriers are free from the organism in from three days to three weeks, most of them becoming negative to culture in less than one week.

Cultures grow best on media somewhat more acid than the ordinary organism likes and therefore are more or less distinguished that way. Ordinary media may have them outgrown. In taking throat cultures, a curved applicator is passed through the mouth and into the nasopharynx without tonsillar or other contact and then withdrawn carefully. After placing on the medium the tube must be kept warm or else you will get negative smears from positive throats. In cases where the organism is in doubt, it may take the laboratory five days to distinguish it.

Entrance to the meninges is from the nosopharynx through the blood stream, giving a generalized disease, with localization in the meninges. True meningococcic septicemia and death may come before the meninges are invaded. It may also be possible for the organisms to pass through the cribriform plate of the ethmoid by direct continuity, or through the lymphatics of the region.

Spraying of healthy noses or throats with antiseptics to reduce the incidence of disease is not advocated. Most of the sprays may break down the protection of the secretions already present. It is claimed, however, that the nasal mucus favors the growth of the organism. Only the mildest of washes should be used. I have never done it, but it would seem logical to use very mild solutions of a stain like acriflavine or pyridium which penetrate without breaking down and

do kill cocci of all varieties, especially meningococci or gonococci.

Vaccines have never been proved. Simon Flexner advocates against their use. One enthusiastic health physician in Graham county last year had great faith in this procedure, and vaccinated his own children. He took them around with him during his calls, thinking them safe. At about the sixth or seventh week, when the fullest protection was expected to be present, two of the children contracted the disease and died. The disease hits so sporadically that it is almost impossible to prove a case for vaccinating.

Control of the contacts is the real essence of protection. The regulations of the State Health Department make it compulsory to keep contacts quarantined until two cultures taken forty-eight hours apart, are negative. The contact carriers soon lose the organism and should not be subjected to harsh sprays, lest their resistance locally be broken down and they contract the disease. Vaccines have failed to clear up chronic carriers, although dried serum insufflations to the nasopharyngeal and nasal tissues may be of benefit.

Chronic carriers are very resistant to treatment. The sinuses and redundant nasal tissues may harbor the disease.

Removal of persons to prevent overcrowding will help prevent epidemics.

# OUR SOCIETY (Presidential Address) E. PAYNE PALMER, M. D., F. A. C. S. Phoenix, Arizona

(Read before the Maricopa County Medical Society, Jan. 12, 1931.)

Our By-Laws require that at least one meeting during each year shall be set apart for a discussion of the business affairs of the profession of the county, with the view of adopting the best methods for the guidance of all. We are complying with these requirements by presenting the evening's program.

In 1931, our Society will be administered without fear or favor and with no partiality or prejudice. I hope for cooperation from the majority of the members. All of the members must observe the "Principles of Medical Ethics" of the American Medical Association. It is going to be necessary for some of our members to be more careful about open abuse of their fellow-members and unethical publicity. This will not be tolerated, to the end that the profession of medicine may occupy that place in its own and the public's estimation to which it is entitled.

The importance of our Society and the

safety of its members, require that it be incorporated. We need a strong organization representing the collective judgment of our local profession which will speak with authority on medical ethics and the business of our organization and act as a unit in all of our relations with the public, press, and governmental agencies. I should like to have action on this matter during this meeting. We have outgrown our old Constitution and By-Laws. New ones to comply with our present requirements should be drafted and adopted.

We have professional control over the Social Service Clinic and, in case a county or city hospital is built, we should have professional control over it also, as it is not possible for them to succeed without our services. In fact, the doctor is the "all important" part of these organizations. During the year most of our members will be called upon to assist in the work of the Social Service Clinic in the new building donated by Mrs. Dwight B. Heard. This building is completely equipped for this work and it will be a pleasure to work there. Our two hospitals have agreed to furnish senior student nurses to assist with the work, this to be an addition to the regular staff of nurses. Clinics in each of the main specialties of medicine and dentistry will be held regularly. The services will be rotating, so that each one of our members will be asked to serve. In the appointment of the heads of the departments, no offense should be taken, as each member who shows his willingness to assist will head the department of his specialty at some time during this year, if it is possible to rotate the service enough times, and in case some members do not occupy that position this year, the officers for 1932 will be asked to give them proper recognition during their term. So please assist in this very worthy work. It can be made a very important educational part of our Society and educate the public to see what the medical profession is doing for charity, so we may receive the respect and support of our community. An inquiry and check is being made on the patients to determine that they are worthy of charity. Those found financially able to pay, are refused treatment. If any of our members find patients in the clinic that can afford to pay, please refuse to treat them in the clinic and report them to the clinic authorities. The following members have been appointed first, because they have served the clinic faithfully in the past. There are still others entitled to first honors and they will be handed out to them later.

Medicine: Dr. Frank J. Milloy; Surgery: Dr. A. M. Tuthill; Pediatrics: Dr. W. P.

Sherill; Chest Diseases: Dr. Howell Randolph; Eye, Ear, Nose, Throat: Dr. W. A. Schwartz; Orthopedics: Dr. J. M. Greer; Obstetrics: Dr. Floyd Sharp; Genito-Urinary: Dr. George Shields; Gynecology: Dr. J. H. Patterson; Radiology: Dr. W. W. Watkins; Pathology: Dr. H. P. Mills; Dentistry: Dr. W. A. Baker. They will call on you to assist; please give your services cheerfully and generously.

We have a very deplorable condition in our County; one that costs many lives each year. Every year we have major epidemics of diphtheria, measles, cerebrospinal meningitis, acute anterior poliomyelitis, scarlet fever, and so forth, with no provision for the care of our contagious cases. Our two general hospitals have no means of caring for such cases, yet cases of cerebrospinal meningitis are being smuggled into the hospitals at night.

When I came here in 1900, the health of the citizens was considered of enough importance to maintain a county contagious hospital. In recent years it has been abandoned and we of Maricopa County, occupy a singular position probably not equalled by any other rich county in the whole United States of America. "The Gold Spot of America" without a place to care for its contagious cases—and yet we invite the people of the world to come here. We can tell them that we have everything with the exception of a good county hospital.

At the present time, we have a serious epidemic of cerebrospinal meningitis and no attempt is being made to investigate or deal with the situation. I think it is high time for this Society to tell our city, county and state health officers to get busy and act immediately and vigorously. Follow the examples of Globe and Miami in Gila County. They had a similar situation a year ago and handled it very admirably and satisfactorily.

I appoint Dr. R. J. Stroud, Chairman, and Dr. C. W. Sult and Dr. A. C. Kingsley, members, of the Committee on Public Health and Legislation.

In case of a new organization, a Committee on Publicity should be added. Its function should be to use modern business methods in distributing public health information and be on the lookout for unethical articles in our local newspapers.

Good, properly prepared papers are necessary for the success of our meetings. I will ask that you voluntarily arrange with our Secretary for the presentation of papers, so we can have our program arranged for, far in advance of the meetings.

These are some of the things that are demanded of you: to uphold the honor of our

profession, to protect our Society, to be charitable to the poor, to reduce the number of contagious cases and deaths, to render service in matters of public health and legislation, and help to further educate our fellow members. These we must do if we expect to deserve and receive the endorsement of the community.

### ETHICS OF CONSULTATION

H. B. GUDGEL, M. D. Phoenix, Arizona

(Read before the Maricopa County Medical Society Jan. 12, 1931.)

Discretion, cheerfulness, tact, courage, and lovalty are essential qualifications of a man who wishes to engage in the practice of medicine. There is probably no profession that carries so many embarrassing moments, so many secrets of others, so many honest endeavors. so many disheartening, discouraging hours, so much sorrow, and yet must display so much cheerfulness, as that of the physician.

The ethics of a consultation in medicine is probably the most critical test of the attitude of one physician to another. The consultant is in a crucible, as it were, in which the least unnecessary mis-sten or word, act or look, is taken into account by the physician in charge. Therefore, it behooves us to render our help, aid. or moral support, with all due respect, carefully considered. Above all, remember that the consultant is not in charge of the patient but is present that he may help in determining, from his knowledge and experience, coupled with the history, symptoms, and study of the attending physician, the condition of the patient and what is advisable in treatment.

As a rule, the fewer changes in treatment, the better: especially so, if the attending physician be a voung man. It has been my experience that the vast majority of the o'der physicians are considerate and exceptionally kind, on such occasions. Very probably they recall their many past experiences and their own professional struggles.

The physician in charge is due first consideration. He has given the consultant a complete history of his patient, the symptoms, the results of his study and work. The consultant, has the opportunity of examination of the case in hand, for his comparison in the findings. The case should never be discussed before the patient. There should be no evidence of affected superiority. The case is to be studied as an entity and closed as such until after conclusions are reached. Then, frequently, the attending physician requests the consultant to give the results

of their consultation to the patient, the family, or both. There is never any use to change diagnosis to the patient; let your opinion be in secret to the man in charge, and ever hold it so. The consultant must protect the physician whether he is present at request of patient or patient's doctor.

In leaving the patient, words of encouragement to both patient and his doctor are worth while and worthy of the consultant's best consideration. Simple, terse sentences are the better, words that will strengthen the friendship and confidence of the patient for the attending physician.

The consultation visit completed, his ties to this patient cease, unless again called by the attending physician. It does not behoove the consultant, on account of friendship, to call on the patient again unless in the presence of, or requested to do so by, the attending doctor.

Nothing should cause him to approach the bedside as physician unless the first doctor is present and, in discharge of the first doctor, no inducements should cause the consulant to take the case. If the first physician is discharged, the consultant is bound by justice to refuse to attend the case under any and all conditions, unless the request is made for his services by a second physician, or group of physicians, and that service to be again as consultant. Certainly, we practise medicine for a livelihood, but loyalty and kindness would not permit a few dollars to inveigle us into forcing the physician of a family to think we were guilty of some irregularity.

The condition of a patient should not be ciscussed with the patient or family, by the consultant, in absence of the doctor in charge. That is a breeder of disloyalty and evidence of poor judgment, thus offending the doctor on the case, because the patient cannot quote correctly. Hence, offense is given. Better, by far, than to talk too much, say absolutely nothing and advise the patient that his doctor will advance him the knowledge requested. By so doing, there will be no seed sown that might otherwise germinate into the troublesome mal-practice suit.

Criticism of the physician who has requested, or through the patient has requested, a consultant, need not be made. The consultant need not criticize to patient, family, or public, the doctor's treatment, even though it may be faulty by the present day standards. There is no time when criticism or superior intelligence should be indulged, for there have been reported many errors, by many of the profession, of all degrees of enlightenment.

A consultant must be a man of discretion, of tact, of loyalty. He must not forget his place. He has been called on account of either the doctor's or patient's request, because of the opinion that his services would assist, which is very complimentary, indeed. I do not believe in the idea of suggesting to a ratient a specialist who is not a specialist just to have a consultant to fill space. This is a waste of the ratient's substance and the results are poor to the profession in general.

To be on time, is a courtesy that is due the consultant. It is rather embarrassing, whether the patient is fully informed or not, to go to the bedside without the attending physician. The only time a calling card is permissible, aside from the regular family doctor, is when the physician in charge, or consultant, is late. This may be left with rerfect propriety, with the time of consultation noted.

It is certainly courteous and essential that, during the consultant's evamination, the physician in charge nav strict attention and not undertake to entertain the children, examine paintings, or carry on some business orgy.

Finally, if services as a consultant come to any of you, through a physician licensed by the state, go. Do the very best that is in you, whether assistance is for aid or for moral support. Be loyal, be honest, be worthy.

# ETHICAL RELATIONS AMONG DOCTORS

M. I. LEFF, M. D. Glendale, Arizona

(Read before the Maricona County Medical Society, in Pheenix, Jan. 12, 1931.)

The nine sections of Article IV, Chapter II, and several sections scattered throughout the rest of the Medical Code of the American Medical Association, deal with ethics amongst doctors themselves. The rules of conduct laid down in those sections are fair and self-evident. They can all be summed up in the good old Golden Rule. There is no need to enlarge upon details. No one deserving the name "gentleman", will slander a fellow-man, even if he happens to be a doctor; nor, will he stoop to entice a patient away from another doctor by methods crude or subtle. A decent doctor will not only not criticize another doctor behind his back, but he will go out of his way to defend him against unfair criticism on the part of others. On the other hand, he will not hesitate to tell the doctor to his face what he thinks of him. We should not abstain from giving a fellow-doctor a piece of our mind when he deserves it, for fear of hurting his

feelings. None of us is infallible, and we all blunder occasionally. We are doing the erring doctor a real service by pointing out his mistake to him. This gives him a chance to correct his error as far as possible, and to avoid repeating it in the future. Any intelligent man welcomes constructive criticism, and doctors are presumably intelligent.

This kind of frank criticism should also

embrace scientific papers. It is obvious that

the writer of a paper thinks well of his effort even if his listeners are bored. No good purpose is served, then, by telling him in the conventional fashion that his paper was wonderful and that he is to be congratulated, when, as a matter of fact, his stuff deserves to be thrown into the wastebasket. much more good would it do the author to listen to the truth? By having the weak parts pointed out to him, he may try a little harder in his next attempt and perhaps succeed in producing something really worth while. Similarly, when a hospital case is discussed at a staff meeting, instead of giving the chart-number, which does not mean anything, the name of the attending doctor shou'd be clearly stated. If the doctor hand'ed the case properly, let him be given the credit due him. In our daily labors we are the objects of gratuitous knocks so often that a little well-deserved praise now and than acts as a bracer to the tired nerves. Should the record show that the attending doctor bungled, the rest of the staff ought to know that too. In the first place, this inside publicity is practically the only means we have to size up the ability and diligence of the various members of the staff. This information would enable us to choose more intelligently when we are in need of a consultant or special help. In the second place, it would do many of us good to know that our mistakes would not be covered up with the dead patient. Strange as it may sound, even doctors are only human beings and, hence, subject to some of the weaknesses of ordinary mortals. One of these widespread failings is inertia, or, in plain English, laziness. With the exception of the few supermen among us, we are not doing our lest all the time. But any doctor will surely exert himself to the limit of his ability if he knows that a slipshod diagnosis or carelessness in the management of his case may expose him to the merited criticism of his fellow-cractitioners.

Another important, but sadly neglected, ethical precept is the adherence to a minimum fee-schedule. A doctor is, of course, at liberty to value his services as high as he pleases. But no self-respecting member of the profession may charge less than the lo-

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cally accepted minimum. A fee-cutting coctor shows less social sense than a brick-layer. He cheapens himself, he hurts the profession, and he cannot afford to give ade-

quate service to his patients.

But the subject which causes most of the bad fee'ing prevailing among the members of the medical fraternity, is the utter disregard for elementary forms of decency in the matter of patient-stealing. Yes, we might as well brand it with its ugly but quite correct name, stealing! The rule against this disgraceful practice, for those who must have rules, is stated in the Code very explicitly. Section 3 of Article IV of Chapter 2, reads, "A physician should never take charge of or prescribe for a patient who is under the care of another physician, except in an emergency, until after the other physician has relinquished the case or has been properly dismissed." No one can mistake the meaning of this axiom of professional conduct.

But of what earthly good are rules, anyway, if they are not being enforced? Let us be perfectly frank and admit that our muchadvertised medical ethics is a myth. The average doctor is not any more ethical than the average business man. Maybe, in this age of go-getting and insane competition, it is too much to expect of a doctor that he adhere strictly to rules of conduct which have come down to us from a less practical age. If that be the case, then let us tear up our ethical codes and stop pretending. however, we insist upon the claim that the practice of medicine belongs to a higher realm than the selling of real estate, then let us have the courage and consistency to dissociate ourselves from those among us who, by their unscrupulous conduct, are turning our high-sounding protestations into a huge joke. No one is compelled to belong to our society. If any business-man-doctor finds that to follow medical ethics does not pay, let him, at least, be man enough to step out. But as long as he retains his membership in this organization, he must play the game according to the rules. And it is up to the decent members of the profession to see to it that every doctor either conducts himself ethically or leaves the Society.

### OSTEOMYELITIS

J. L. BORAH, D. D. S. Phoenix, Arizona

Ostcomyelitis is inflammation of the bone and its marrow. Ostcomvelitis of the jaw implies the presence of marrow in the mandible. The marrow is not in one mass surrounded by compact bone, however, as in long lone, but is broken to bits distributed

here and there in small cavities through the bone. Were it not for the presence of marrow in the mandible, the term osteitis would be the correct term to use. Bone is connective tissue impregnated with lime salts, chiefly calcium phosphates. This compact frame-support tissue has channels known as the Haversian canals, from which radiate smaller spaces known as canaliculi. Bone is of two general types, known as spongy, or cancellous, and dense, or compact. In the spongy bone, the canals and canaliculi are relatively large and the bony substance is reduced to slender spiculae and bars. Dense bone is also porous, but all the channels are narrow and, hence, there is a greater proportion of calcified tissue than in the spongy The blood circulation of the bone is through the Haversian canals and canaliculi.

Inflammation of bone occurs and exhibits the same phenomena as in any other tissue. In any inflammatory process, there is an engorgement of blood vessels and lymphatics and a deposition of leukocytes, lymphocytes and other protective cells. In soft structures, there is ready expansion of the tissue to accommodate the invasion of cells and the dilation of the blood vessels. In bone, the canals and canaliculi are the blood spaces and when these become invaded with leukocytes and other inflammatory cells, there is a blocking of the passages and a shutting off of the blood supply to the bone. In any tissue deprived of its blood supply, necrosis results. The leukocytes and perhaps other tissues disintegrate, setting free enzymes and ferments which produce autolysis, or softening, of the part shut off from the blood supply. This occurs in bone the same as in any other tissue and, because of the ungiving qualities of bone, the blood spaces become readily blocked and small areas of necrosis or osteomyelitis are thus induced; the resulting changes are ordinarily spoken of as absorption, rarefaction, or osteoporosis of bone.

It seems to me that, in small infected areas where osteoporosis has developed, there must be sufficient bringing in, from healthy tissues, of oxygen and other nutritive elements and a taking up of waste material by the adjoining lymph spaces to keep the affected areas in a quiescent or a semiquiescent state. Bony tissue has one characteristic not manifested by most other tissues, in that it may deposit new bone in or about the affected area and produce a condensation of bone, or sclerosis. The sclerosis is most apt to result in chronic infections other than tuberculosis.

The organisms most commonly responsible for ordinary osteomyelitis are staphylococci,

streptococci, pneumococci, and colon bacilli. Mead says that tuberculosis and syphilis interfere with the nourishment of bone and give opportunity for an invasion by pyogenic bacteria.

The inflammatory process in the jaw may be localized or diffuse, and acute, subacute, or chronic. The diffuse process differs from the localized only in that the etiologic factors or the structures of the bone produce or admit of easy dissemination.

The ordinary causes of osteomyelitis of the jaw are trauma—such as extraction of teeth, introduction of local anesthetics, compound fractures of the jaw—blood and lymph stream infection, and infection from adjoining structures. Heavy meta's, such as mercury and phosphates, and other poisoning, such as cocaine, may be responsible for osfeomyelitis of the jaws. The most common cause of osteomyelitis of the mandible and maxi'lla are processes connected with the teeth—pulpless teeth probably more than any other—pyorrhea, and hence osteomyelitis of the jaws is usually of interest to the dentist.

The symptoms of acute osteomyelitis are sudden onset, usually with chill, temperature from 102° to 104°, excruciating pain, rapid pulse, swelling, dry coated tongue, increased leukocvtosis of the blood, enlarged lymph nodes, pus within a few days, and loose teeth in the infected areas. The pain, at first localized, becomes general throughout the jaw. The rus burrows through the tissues and points at the area where it encounters the least resistance to the surface. The mandible, being of more dense bone than the maxilla, suffers more from osteomyelitis than the maxilla. The cancellous formation of the maxilla favors drainage and, therefore, recovery. In the event of comminuted fracture of the bone, the pus and other exudates surround the fragments and loosen them, making sequestra. Spontaneous fractures may result from the osteomyelitic processes, because of the weakened bone.

The symptoms of chronic osteomyelitis are primarily the systemic effects and the bone changes, either rarefaction or sclerosis. Rarefaction or sclerosis may go on in the contiguous areas, giving a moth-eaten appearance of the bone.

In the diagnosis of osteomyelitis, the x-ray has become a most helpful adjunct; in fact, it is almost necessary. It should be remembered, however, that in the early period of osteomyelitis, before bone destruction has actually taken place, the roentgenogram may give only negative results. As the infection increases and rarefaction of the bone results, the roentgenogram will show the pro-

cess. In advanced osteomyelitis, the roentgenogram shows both the osteoporotic and the sclerotic changes and the sequestra. It is important that the extent of the osteomyelitis be ascertained so that adequate treatment may be given.

The treatment consists in assisting nature to obtain proper drainage, as early as possible and with the least destruction of tissues. The cosmetic effects are to be thought of, but they are secondary to the control of the infection.

In the acute process, usually no effort is made to remove roots, loose teeth, or sequestra. When the acute stage has passed, the removal of loose teeth, roots, and sequestra, and the introduction of anesthetic, must be done most carefully; the needle must not he passed through affected areas to healthy tissues. I advise nitrous-oxide-oxygen anesthesia, whenever satisfactory local anesthetic cannot be given without danger of spreading Schaefer, Blair, Mead, and the infection. other authorities, emphasize the importance of conservative treatment—giving nature a time to form the sequestra and limit the infective process before extensive or radical surgical measures are undertaken. Loeb calls attention to the importance of conservative treatment of osteomyelitic processes in the child, in order not to destroy unnecessarily tooth buds for the permanent teeth. Before this warning, surgeons were often curetting out potential teeth with necrotic tissue. In the adult the curet may be safely used to remove necrotic areas, but with care not to go deeper than the necrotic tissues. septics are of less value in bone infection than even in soft tissues. Mead recommends the packing of the necrotic area in which there is osteomyelitis with iodoform gauze, changed at least twice a day, or the insertion of a rubber draining tube, and irrigation with chlorazene or normal saline solution. In pathologic fracture, the gauze is more to be recommended than the tube. Attention should be given to the diet and to the proper use of sedatives to allay pain. The use of the ice bag and heat, especially the alternating of them, is often of great benefit.

It may be necessary occasionally to remove teeth during the acute stages, but this should be done with the greatest of caution. The recent advances in medicine, in which even minute foci of infection are found to be important causes of systemic disease, should awaken the dentists to early recognition of foci of osteomyelitis about teeth.

There is a growing importance of Vincent's angina infection as the cause of a variety of pathologic conditions in the body. The den-

tists should recognize this in the treatment of osteomyelitic processes of the jaws, even when doing simple extractions for apical abscesses and severe pyorrheal conditions. SUMMARY

Osteomyelitis of the jaw is common. It is more often chronic than acute. It may be responsible for serious systemic processes. Conservative treatment should ever be the rule. Early drainage is always indicated in acute processes. Extraction, curettement, and removal of sequestra, should be delayed until the acute stage has subsided. Vincent's angina should be recognized as playing a possibly extensive, though as yet largely unknown, part in many serious processes. The inflammation of bone is not unlike inflammation elsewhere, and the same laws as in treatment of infection of soft parts, should govern in the treatment of osteomyelitis.

# PUBLIC HEALTH LABORATORY SERVICE\*

M. GREENFIELD, Chief of Laboratory Santa Fe, N. M.

(\*Read before the annual meeting of the New Mexico Public Health Association at Santa Fe, May 11-13, 1931.)

I might speak about packing specimens and point out errors that could be avoided but to say too much on this is like scolding a boy who has fallen from a tree and broken an arm. He receives enough punishment as it is, without any additional admonition. Besides, the careless ones are usually the ones who do not attend such meetings as this. I cannot resist, however, saying a little about sending stool specimens for release from typhoid quarantine and for certification of food handlers. In most cases, poorly taken and packed specimens give you simply a "no" report, but lack of care in preparing a stool specimen will often give a false negative report which might lead to grave error. There is much discussion about our stool specimens. It is true, to be of 100 per cent efficiency these specimens should be in the laboratory a few hours after being passed by the patient. Since this is impossible we have tried our best to prevent as many errors as possible by preparing glycerine brilliant green solution for shipping, and giving directions about the amount of specimen to send. It is when these directions have been neglected by the one preparing the specimen that a part of our false negatives occur. It is a lot of bother, I know, to collect specimens from typhoid cases before release, for it often is a long-drawn-out period and it is hard to carry the interest of the case and contacts. We have recently had a case in the laboratory that renews our interest in these typhoid releases and makes us realize that more, and not less, diligence should be exercised. A doctor brought a specimen of blood to the laboratory from a young woman who had been ill about ten days, exhibiting no other symptom than exceedingly high fever. He asked for a Widal, which proved to be positive for typhoid. In telling of the case, he stated that the young woman had been keeping company with a young man who had had typhoid during the outbreak of typhoid in McNary, Arizona. I think this outbreak was almost three years ago. In determining the source of the infection of the young woman, the health department collected stool specimens of some of the contacts, including a specimen from the young man having a history of typhoid in Arizona three years ago. Typhoid organisms were isolated from the latter specimen only. One wonders how many people had contracted typhoid from this carrier before this case of the young woman. Such an incident makes us realize that, although taking these stool releases is tiresome, it nevertheless is very much worth while in the long run.

While we are thinking of typhoid, I should like again to urge the doctors and health officers to send wet blood specimens whenever possible for their Widal tests. When we have as much as 4 or 5 cc. of blood, we can give you much better and more accurate information than we can with only the dry drop of blood. With that kind of a specimen, we give you a determination on Para A and B as we'll as typhoid and also on undulant fever. Last summer we had one small area where Para B infections were the rule, and the wet specimens were a great help in making a better diagnosis. Undulant fever is in the state and must be recognized as a definite health problem. It would only be repeating what you have all read and heard to dwell on the subject at great length. am sure you read the article in one of the recent numbers of the Journal of the American Medical Association relating the isolation of Bacterium meletensis abortus from human placenta and fetus. No doubt a number of the typhoid-like febrile cases are undulant fever, and no doubt a number of abortions can be traced to the same. The laboratory makes it a practice to set up an undulant fever titration on specimens sent in for Wassermann which give a case history of frequent abortions. Such titrations are set up only if such specimens are negative Wassermann. In a number of cases we have had undulant fever titrations sufficiently high to warrant the probable diagnosis of undulant fever.

I wish the doctors would feel a little more free to send blood cultures to the laboratory. We send out sets for blood-culture work. One jar contains a bile-broth mixture, for we find that this medium gives quickest and best results for typhoid; the other jar contains a plain veal broth, for such things as pneumococcus and streptococcus do not grow on the bile broth. For typhoid suspects, this culture should be taken before the twelfth day.

Doctor Earp has arranged with Dr. R. R. Parker, U. S. Public Health Service, Hamilton, Montana, to furnish the state with vaccine to prevent Rocky Mountain spotted fever. We carry in our ice box sufficient material to vaccinate five individuals, and can get more as it is needed. I have a few forms explaining the use of the material. They advocate that an individual exposed to the bites of ticks in an area where Rocky Mountain fever is prevalent, should take these treatments in the early spring before ticks appear. The material is sent out by the U.S. Public Health Service free of charge, and anyone in infected areas is urged to make use of it. I think we have had cases reported only from Rio Arriba County.

The laboratory is isolated and we work in the dark more than any other department. Often we could be of more help if we knew more of the situation. Take us into your confidence and we can be of more service. Several years ago, a doctor from one of the western counties was brought to the laboratory by a mutual friend. After looking at everything and asking a lot of constructive questions, he remarked, "I am glad that I came here. I have sent a few specimens to this place but paid little attention to the reports, for I really thought it was just another institution to give someone a job and that the determinations were made somewhat as we determined who was 'it' in our childhood games by saying Enie, menie, mo". I am glad to say that this doctor has sent specimens more or less regularly for four years now.

The Bureau of Public Health is generous in giving us our share of the appropriation and no doubt at times with a measure of hesitancy for we are isolated from them also and it is hard for them to see our real needs. They can see that their force is rushed and do what they can to better conditions. It is hard for them to visualize our conditions for they do not see our hectic days and over crowded conditions. Some days and even months are very light, while others are all too heavy but this cannot be regulated, since specimens must be reported out at the earliest possible moment and cannot be left until

a more opportune time. For that reason, the laboratory force should be sufficiently large to stand a stress. Ours is not and sometime we might not be able to take the stress. A break will come and you will suffer as well as we. I do not like my force to work too long hours, especially for more than a day or two at a time, for the human element of fatigue will become apparent and the work will not be of the best quality. For all these reasons, the laboratory must have substantial financial aid soon or we shall be forced to say that some determinations cannot be made. I am saying this not as a bluff nor a threat, but simply as a statement of facts.

# ROTARY AND THE CRIPPLED CHILD

J. M. GREER, M. D. Phoenix, Arizona

(Read before the Rotary Club of Phoenix.)

The first thing you might ask me is, "What is a crippled child"? A crippled child may be defined as one whose movements are so restricted by accident or disease as to affect his capacity for self support. "Why do we talk about Rotary and the crippled child"? One reason is that the International Society for Crippled Children, which is bringing light to thousands of homes, is Rotarian in its origin and Edgar F. Allen is its beloved "Daddy". Also, hundreds of Rotary Clubs have interested themselves in the work of discovering the neglected crippled children of their communities and have aided and are aiding in giving them care and attention which will improve their unfortunate condition. Each Rotary Club must determine for itself what community service activity it desires to undertake. As you know, it is a general Rotary policy that a Rotary club should assume responsibility for a community service activity only in the event that no organization exists, or can be caused to exist, for such activity.

In Arizona, as is true in many other states, we have a State Society for Crippled Children, which is a component part of the International Society for Crippled Children. Therefore, it is the function of Rotary in Arizona and the Forty Third District, through its various clubs, to assist this organization in its work. This assistance can be given both as clubs through their respective committees on crippled children and also as individual Rotarians.

Perhaps a bit of history of Rotary, with respect to its work on behalf of the underprivileged child, would be of interest to the members of this conference. Probably the first Rotary Club to interest itself in the condition of neglected crippled children in

its community, was the Rotary Club of Syracuse, N. Y., in 1913. In 1916 the Rotary Club of Toledo, Ohio, gave aid to neglected crippled children of that city and later to those throughout the State of Ohio with the cooperation of other Rotary Clubs of the State. From this work grew up the Ohio State Society for Crippled Children and later similar societies in other states of the United States and in the provinces of Canada. Finally, the International Society for Crippled Children developed. Membership in these organizations is largely held by Rotarians.

In 1920, the members of the Order of the Mystic Shrine entered upon a program of building hospitals for crippled children as a war memorial, or, rather, as a peace memorial for friendless, orphaned, and crippled

children.

In 1922. Convention of Rotary International adopted the following resolution:

"Whereas Rotarians have evinced an interest in crippled children and have expressed a desire to assist in bringing to crippled children physical corrections, surgical relief, and education, in cases where such treat-

ment will be of benefit,

"Now, Therefore, Be It Resolved that the 13th Annual Convention of Rotary International commends this humanitarian activity on the part of the Rotary Clubs so engaged and directs thereto the attention of the delegates present at this convention, that their own clubs may take cognizance of the movement as offering an opportunity for service in their respective communities."

Work for crippled children may be divided

into four phases:

(1) Survey, or the finding of the cripple.
(2) Diagnosis, the determining of the condition and the estimation of what will be required to correct it in so far as possible.

(3) Treatment, education, and training of

the crippled.

(4) Finding of employment for the cripple after he has been treated, educated, and trained.

Inasmuch as the Arizona Society for Crippled Children is the organization that we as Rotarians are to assist in this work, it may be presumed that information concerning this Society will be of interest to all of us.

Realizing that there was a great need in the state for an organization to coordinate the agencies already doing a wonderful work for the crippled child in Arizona, and to extend that assistance of coordination to those not yet reached, as well as to work out a definite program, the Rotary Club of one of our towns started a preliminary survey. (A survey had previously been made by the Shrine and some very valuable data obtain-

This survey was carried on through the Boys' Work Committees of the Rotary Clubs throughout the state, with the help of other organizations and individuals. It was of necessity a limited piece of work. However, it showed very clearly that any undertaking of this kind would be too large a program for any private organization to attempt. From this movement the idea of an Arizona Society for Crippled Children was created, with formal organization in October, 1929. Learning of this move, the International Society for Crippled Children presented the Arizona Society with a membership in its organization, giving to it the advantages of the International Society's experience and the findings of its research departments. The aim, or rather, I should say, the first aim of the Society was to create enough interest among the people of Arizona to make possible a complete state program.

Logically, the first thing to do seemed to be to make a survey of all the agencies existing in the state which are doing work pertaining to child welfare; to determine how many children are reached, by what methods, at what cost, and to find out what our hospitals, institutional and school facilities are, for the treatment and education of this group of children. This information was to be studied and analyzed and conferences held with community leaders with the hope of working out a solution to these problems in our state. At the same time, with the assistance of local committees and organization and workers already in the field, it was the aim to concentrate efforts to obtain actual knowledge of every crippled child in the state.

Therefore, the Arizona Society for Crippled Children was organized in October, 1929, and a survey was begun in January, 1930, and completed in June of that year. In making this survey, information was obtained from the Shrine survey that was made in 1926 and the survey made the year before by the Boys' Work Committee of the Rotary Clubs and used as a basis of this survey. A very interesting thing was found and that was that many of the children found in the previous surveys could not be located. This indicated our transient population and the need for a continuous survey.

The families of 700 children were visited and in this survey data such as the following were obtained, if possible: (1) The cause of the crippled condition; (2) the medical care to date; (3) care available at the present time; (4) the future needs of the child. The object of this was to organize the work of the Society in such a way that the crippled children could be cared for in the most

efficient manner, working with the other organizations.

One of the outstanding things that this survey showed, among other things, was the great need for braces and brace-shop service. Efforts were directed toward the establishment of such a service. A revolving brace loan fund was started by the Rotary Clubs throughout the state and a shop known as the Arizona Brace Shop was established in Arizona and is now in operation. There is also a fund raised by the Shrine for the purpose of paying transportation of children to and from Shrine Hospitals and a limited care while waiting. These funds are entirely inadequate.

The question may be asked by some of you, "Is not the work of the Arizona Society and the Shrine and perhaps some of our other organizations, a duplication?" The answer to this is: Not at all, because those eligible to treatment in Shrine Hospitals are limited by qualifications and markedly limited because of the large waiting list. It now takes about eighteen months before a child can be taken to one of the Shrine Hospitals, because of the large demand for such treatment. One can readily see that valuable opportunities are lost for doing the greatest good to the child if nothing is done during this waiting time.

Under the Arizona Society, diagnostic clinics have already been held in Globe, Miami, Tucson, and Phoenix. At these clinics, in addition to the examination of the child and the recommendation for his care and treatment, other things are accomplished, such as the development of the proper attitude toward the afflicted child on the part of the parents and the community, the arousing of the public conscience to its duty toward such children, the education of the community regarding the causes of sickness and deformities and the possibilities of preventing them.

You are, no doubt, saying to yourself by this time, "Well, all this is very interesting, but where do I come in? I am neither a doctor, a social service worker, a brace maker nor a hospital superintendent, nor an educator; I am just a business man." If you will follow me for a few minutes, I believe that I can explain to you where you come in. First and foremost, we must realize that the problem of the cripple is a community problem. It is the problem of the citizenship of the state and, therefore, the problem of each individual citizen. It seems to me that it is not enough to lend our financial aid, although that is badly needed, but we must do more than that.

The problem of finding the cripple is not

always easy. There is a great tendency to hide away the cripple. This is sometimes done by the individual himself and sometimes by the parents. Recently, we found a little girl that had been in hiding. She was found accidentally by a school nurse. She could not walk and never had walked, although she was eight years old. She skidded along the floor on her hips. This nurse happened to step in one day on another mission and saw this child skidding along the floor to hide behind a door. She is now in a hospital under treatment. Another case was slipped into my office one day by a sister, the crippled child in a laundry basket. This case was lost track of and so far has not been found. Another case was cited where a mother denied her crippled child and it was only found by the postman, who accidentally came around to the back door one day with a special delivery letter. The mother still denied it when social service workers came to inquire. Such an attitude must be overcome and each and every one of us can help to overcome it. In the words of John Culbert Farries, Director for the Institute for Crippled Children, in a recent article in the "Rotarian": "Some people shy at the cripple like a skittish colt at a windtossed paper whirling down the roadside and with about as much reason." The fact of the cripple is obvious everywhere; we must face this fact and not shy from it. We must say, as business men: "Here is a problem. I am willing to inform myself concerning it and am ready to help solve it." By assuming such an attitude we shall soon overcome such prejudices as those mentioned above, and efforts at concealment on the part of the cripple and his parents will no longer be a stumbling block in the handling of this work.

Again, we must remember that the earlier we can get the cripple, the more we can do for him. The care and treatment of the cripple is a long-drawn-out affair. We are at times apt to allow our enthusiasm to get away with us and, during the presentation or the relating of a pitiful case, we may jump up and say. "Gee, that is a terrible case; fellows, we have got to do something about it. Let us take up a collection and send him into the hospital and pay for his hospital and operation." This is all very well, but, in the the first place, this would only be a very little in the solution of the problem. paying of the hospital would help of course, if it were a hospital case. The paying for the operation would not be allowed by any surgeon, for no surgeon would accept money on such basis, so that is not needed. The thing we must remember is that the problem of the cripple should be solved by a definitely

outlined plan and all of the phases of the problem must be taken care of, or it is not a solution. His body must be mended of course, but, at the same time, his mind must be treated. He must be taught. He is discouraged and the "dis" must be removed from this discouragement as well as the "dis" from his physical disability. He must be educated. He must be trained to do something, and, lastly, and this sometimes seems the hardest, he must be employed at some gainful occupation where he can be self supporting and thus gain and maintain his self respect. He must be taught and made to know and feel that there is a place for him in the world and that he is needed to fill that place. He must not, by any means, be treated as an object of pity.

In closing this brief talk, which has only skimmed the surface, I should like to have you remember the various phases of this work, and remember that they are all important and all necessary in the solution of the problem of the cripple:

First: The finding of the cripple.

Second: The care, treatment and educa-

tion of the cripple.

Third: The training of the cripple to do something useful. The instilling into his mind the thought that there is a place for him and that he can be useful, earn his living, maintain his self respect and be of value to society.

Fourth: The finding of employment for this cripple and the education of the public in such a way that it will not shy at his

presence.

Finally, let me quote again from John Faries: "As key men in every community we have the power to mould public sentiment in behalf of the cripple. We can call a halt to the terrible waste in man power through the non-employment of the cripple in positions in which he can render efficient service. As employers of labor, we can prove for ourselves the truth of the indisputable fact that the cripple makes a good employee. The cripple can be placed in an orderly cosmos, and he will no longer be a waste scrap of humanity blown into a forgotten corner by the wind of adversity".

### CASE REPORT

S. D. SWOPE, M. D. El Paso, Texas

(Presented before the El Paso County Medical Society, September 14, 1931.)

J. N. G., male, Mexican, 42, single, printer.

Family history unimportant.

Present complaint: Complains of inability to walk; weakness of legs. Vision diminished in left eye, imperfect hearing in right ear.

Past history: Perfectly healthy until twelve

months ago when he developed a severe frontal lobe headache, this headache persisted for six months.

Present illness: About nine months ago he had a disagreement with his co-worker, which upset him very much. Three days after this occurrence, he was taken sick while at work. Had to go home; arriving at home he had a convulsive attack. Was unconscious four hours. When he regained consciousness he could not get up or walk. He noted that his hearing on the right side was imperfect and that his left eye persistently turned to the right side. Remained in bed for three months, when he had dizzy spells followed by vomiting. When these spells were severe, he would fall, and usually to the right side. On several occasions he had these spells while out on the street. At the beginning of his present illness, he complained of a stiff neck and of a heavy pain in the back of his head. Since the above he has been unable to follow his occupation and thinks that his condition has grown progressively worse. He has more difficulty in getting about at night than in the day-time.

Physical examination: Walks with feet wide apart. Romberg negative. Protrudes tongue to the right. Sense of taste absent in the right side of his tongue and right buccal cavity. Left normal. Rhythmic twitching of the right lower lid and right side of face. Stands in a fixed position, with head and neck fixed, usually leaning toward the right. Lateral nystagmus in both eyes. No perpendicular nystagmus. The lateral nystagmus is not constant, but, whenever the eyes are moved to the right or left, the oscillation of the eveballs takes place. Finger and nose pointing practically normal. Weakness of right leg more apparent than left. Difficulty in walking backward, usually bowing head to the right side. Patella reflexes exaggerated. Ankle clonus positive on right side. Babinsky normal. Abdominal and cremasteric reflexes apparently absent. Hand grip stronger on the left. Rapid rotation causes him to feel as if he were in an aeroplane. Sensation over entire right side of body diminished; very noticeably diminished on the right side of the face and plantar surface of the right foot. No difficulty upon swallowing. Has had his leukoderma (vitiligo) fifteen years, on hands, both elbows, back of the neck and shoulders, feet, blotches on legs, glans penis. Blood pressure is 120/80. Cerebral pressure has not been taken. Wassermann spinal fluid and blood negative.

Conclusions: I think this is a tumor of the cerebellopontine area, right side, with sufficient pressure to influence all the intracranial nerves except,

possibly, the second.

The rapid onset and the slow progress, or want of further development, would indicate a hematoma

or angiohematoma.

Dr. W. E. Vandevere very kindly examined this man's eves and ears and he will make a report on his findings. Dr. W. W. Waite kindly made x-rays of his head, which he will describe.

DISCUSSION

DR. W. E. VANDEVERE: I made an audiogram of this man. Right auditory function is markedly impaired, with only an island of hearing for the tones 512, 1028 and 2048 double vibrations per second. In left car function is makedly impaired in the high notes of 2048, 4096 and 8192, showing a nerve disturbance of the left auditory nerve also. There is a marked bilateral nystagmus on looking to the right. Twitching of right lower lid, and mucles of right side of face. Tongue slightly protrudes to the right and muscles of the tongue twitch. Sensation over right cheek impaired. Sensation of taste, especially on the right side, absent. Not much disturbed on the left. Eyegrounds appeared normal.

There seems to be a disturbance of the 5th, 7th, 8th, 9th and 12th nerves on the right side, with some slight involvement of the left auditory nerve. The disturbance would appear to be near the origin of these nerves in the vicinity of the 4th ventricle in the region of the cerebello-pontile area.

DR. SWOPE: His sense of smell is decidedly impaired. Dr. Waite made some stereographs of the head, which he will pass around.

DR. W. W. WAITE passed around stereographs. Lateral view proved normal. Septum is pushed somewhat over to the left; looks as though the ventricles are fairly well outlined. Right ventricle seems to be pushed up and away from the center. The septum being pushed over to the left would show the growth to be on the right side. Practically all intracranial nerves have their origin on the floor of the 4th ventricle. As far as we can tell this looks as if it might be a growth that was pushing around the 4th ventricle and was involving those nerves. It is evidently pushed over a bit to the left, with some few symptoms of disturbance on the other side.

DR. SWOPE: In Saxe's new book, 1931 publication, he describes a great many of these cases and the operations which he has done on them. Some cases he has operated several times. The book is very interesting and the cases which he reports have been handled very satisfactorily.

DR. B. F. STEVENS: The chances are this is due to syphilis. In this type of people nine out of ten are syphilitic.

DR. SWOPE: I do not think nationality has much to do with this case. The spinal fluid and blood Wassermann were negative and there are no evidences of his having syphilis, with absolutely no history of syphilis. I do not think there is any suggestion of syphilis in this instance.

DR. L. M. SMITH: While the man's nationality may be against him, even if he had syphilis I do not think you could count on that being the cause of the mental disorder. With the symptoms he has, and with as much involvement as there seems to be, if there were syphilis, it ought to show in his spinal fluid.

DR. MOTT RAWLINGS: This man's case fits in very closely with tumors of the cerebellopontile area. perhaps an angioma—a tumor arising from the dura or covering of the brain. Most of these tumors of the cerebral angle arise from the exodic rerve. This man has practically no hearing on the right side and that would seem to me good evidence that he has an angioma.

# ELECTROCAUTERY IN TUBERCULOSIS OF THE LARYNX

D. R. GASKINS, M. D. Phoenix, Ariona

(Discussion of paper on this subject by Dr. W. E. Vandevere, published last month. This discussion omitted in error.

DR. D. R. GASKINS, Phoenix: There is no condition in medical science for which the treatment has been developed by trial and error as in tuberculous larvngitis. There is hardly a drug in the pharmacopeia, or hardly a surgical principle, that has not been used and advocated with more or less enthusiasm for the treatment of this condition. The fact that this condition has been recognized almost as far back as medical history dates, the fact that practically every thing has been tried from time to time, and the fact that many of the patients get

well with treatment, many without treatment, and many in spite of treatment, bring us face to face with the realization that it is not so much what we do in the treatment of this condition, but the possession of that rare surgical judgment of what not to do and when not to do it.

Dr. Hajek, lecturing before the University of London, sounded the keynote governing the principles of the treatment of this condition, and at the same time coined an expression which I am sure has made a very grave impression on many laryngologists. He said, "The older amongst you will remember, as I do, the time when curettage of tuberculosis of the larynx was introduced by Heryng and Krause and was adopted by many laryngologists who practised without any regard for the general condition of the patient. All of us, with few exceptions, took some part in this line of treatment. I well remember demonstrating in my clinic the healed scars on the interarytenoid mucous membrane of a female patient, age 24 years, whom I had curetted. The enthusiasm over the case gave way after a few days to general feeling of disenchantment, when we were informed that she had died of systemse tuberculosis. At that time I coined the expression, 'The larynx healed, the patient killed.'"

It is not my intention to bore you with a review of the literature covering the many procedures and drugs that have been used in the treatment of tuberculous laryngitis, for that subject is not under discussion. The subject for discussion here is electro-cauterization. With the exception of voice-rest and different modifications of sun-light therapy. the only procedure that has stood the test of time is actual cautery. We have no other procedure at our disposal that is so efficient for the relief of pain, which compares with the cautery when used with discrimination. Cauterization is not a wholesale procedure in which an attempt is made to remove or destroy all of the tuberculous tissue, but rather do we attempt to stimulate a reaction with the formation of granulation tissue, which is necessary for the sloughing off of the heat-destroyed area. The development of this granulation tissue is attended by the formation of new blood vessels which grow from the periphery through the previously avascular tubercle. This brings nutrition to the fixed connective-tissue elements, enabling them to withstand the action of the tubercle toxin, and probably also causing the epithelioid cells themselves to develop into fibroblasts. To repeat, then, the object of the cautarization is not so much the destruction of diseased tissue as it is the healing of the tubercle, and, because of the limited trauma necessary, important organs are not removed or destroyed except by the disease itself. With the possible exception of very large tuberculomata and completely diseased epiglottides, all the clinical types of localized tuberculous lesions are more successfully combated by the cautery than by any other form of treatment.

In the last few years, quartz light therapy and chaulmoogra oil have come into favor in the treatment of this condition. I have been very much disappointed in the domestic water-cooled quartz light and have been trying to get some information on the light developed by Wessley, of Vienna; but there are only a few of these lamps in this country and their expense makes them almost prohibitive.

I have had some very good results from local instillation of chaulmogra oil, provided the oil imported from Burma is used.

In closing, I merely wish to stress that while cauterization is one of the most useful procedures that we have, it must be used with discrimination. For, after all, the condition of the larvnx is only a barometer pointing a warning finger at the progress or retrogression of the pulmonary lesions.

JANUARY, 1932

# PUBLIC HEALTH NOTES

J. ROSSLYN EARP, DR. P. H. Director New Mexico State Bureau of Public Health WHAT WAS 1931 WORTH?

It is much too soon to give a final judgment on the value of the old year to public health. Those who look for spectacular discoveries are often needlessly disheartened.

For while the tired waves vainly breaking Seem here no painful inch to gain, Far back through creeks and inlets making Comes, silent, flooding in the main.

One paper of unusual interest published during the year' is the outcome of observations made during eight years of routine laboratory examinations for diphtheria. The authors have noticed that diphtheria bacilli can be divided into two classes (and a third intermediate group) each with certain distinctive morphological and cultural characteristics. They have devised a new culture medium the more readily to differentiate the two varieties which they term B. diphtheria gravis and B. diphtheria mitis, respectively. The former is found to be associated with severely toxic cases of the disease, while the latter, though it produces an abundant membrane, does not give rise to severe toxemia. It seems quite probable that an antitoxin prepared by use of the mitis form might not be very efficacious in treating a person infected with the gravis form. It may also be found that toxoid for immunization should be prepared from toxin derived from both forms. And, again, it may be proved that this new classification is of less practical significance than its authors now believe it to be.

How much simpler it all was thirty years ago! Then there was one bacterium for one disease and none of these closely related forms that might be highly virulent or slightly virulent or not virulent at all. Yet, patience; these so numerous observations on the interaction of environment and heredity in the bacterial world will some day be classified. The science of bacterial genetics is in its infancy, but one suspects that before it is much older it will propound generalizations of far-reaching significance.

Take, for example, the recent work on rough and smooth colonies and that on granular and possibly filterable forms of the tubercle bacillus<sup>3</sup>. What connection may this have with the diphtheroid and sometimes granular organism characteristically found in the glands in Hodgkin's disease? secret of liaison lies in the womb of time between the ancestors of the harmless Timothy grass bacillus and the deadly bacillus of

The specific organism of coccidioidal granuloma when found in animal lesions looks so little like a mound that it was originally classified by Stiles as a protozoan, in 1894. When Doctor Montgomery, of San Francisco, cultivated a mould from these coccidia-like particles, he threw his cultures away, believing them to be contaminated. No one has yet seen the fungus growing in a state of nature, but the distribution of infected animals in the hot dry valleys of Southern California and right up to the bank of the Colorado river, suggests that we have almost as good a chance of finding it in Arizona or New Mexico as they have in California. And in this connection may I very warmly commend the monograph published on this subject by the California Department of Public Health. Of the 286 reported cases of coccidioidal granuloma, two originated in Arizona and one in Texas. So far none has been reported in New Mexico.

New uses are being found for rodents, whose hostages, in hundreds of laboratories for the study of nutrition, have already made some amends to humanity for the depredations of their kind. In the bacteriological laboratories of the University of Illinois, a first cousin of B. typhosus has been discovered which infects rats and mice, giving them a disease in all respects similar to human typhoid fever. Already advantage has been taken of this discovery to test relative merits of oral and subcutaneous administration of typhoid vaccine. Both methods gave equally positive and successful results. In July, 1930, Doctor Max Thieler, of Harvard, discovered that white mice are susceptible to yellow fever virus, not through the blood stream, as is the case in man and in certain monkeys, but by intracerebral inoculation. This discovery has been followed up under the auspices of the Rockefeller Foundation, and a test, known as the intraperitoneal protection test in mice, has been devised to estimate the protective value of convalescent human sera against yellow fever virus.

An account of this and other research work on yellow fever is to be found in the last annual report of the Rockefeller Foundation.

### REFERENCES

1. Anderson, J. S.; Happold, F. C.; McLeod, J. W.; and Thourson, J. G., on the existence of two forms of Diphtheria Bacillus, etc. Journal of Pathclogy and Bacteriology, 34:667 (September) 1931. 2. Petroff, S. A.; and Branch, A.: Bacillus Cal-

mette-Guérin, Am. J. of Public Health, 18:843

(July) 1928.

- e. g., Mellon, R. R.: Experiments on a Filterable Phase in the Life History of the Tubercle Bacillus. Tubercle (American section) 13:10 (October) 1931.
- 4. Coccidioidal Granuloma: special bulletin No. 57, 1931.
- 5. Sawyer, W. A.; and Wray, L.: The Use of Mice in Tests of Immunity against Yellow Fever.

6. The Rockefeller Foundation: Annual Report,

1930.

# Southwestern Medicine

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# INDEX AND TITLE PAGE

The index and title page for Volume XV will be sent to any one who desires them. They are not sent out generally, as they are of no value to any one who does not keep a file of the Journal for future reference. Address requests for index and title page to A. C. Taylor Printing Co., 121 E. Jefferson St., Phoenix, Arizona.

### CINCHOPHEN

More than 36 deaths have been reported due to the toxic effects of cinchophen. "The liver in every case that has been studied at necropsy has shown degenerative changes characteristic of one or more of the phases of acute yellow atrophy". Pearson and Harding—Am. Jour. Med. Sciences, Jan., 1931.

"Indiscriminate use and counter prescribing is dangerous, and the drug or its congeners should not be used in cases difficult of careful control and observation". Meyer A. Rabinowitz, M. D., J. A. M. A., Oct. 25, 1930.

The following preparations contain cinchophen:

Phenyl-cinchoninic acid, atophan, novatophan, atophanyl, diiodo-atophan, biloptin, oxyliodide, quinophan, agotan, neo-cinchophen, phenoquin, leukotropen, atophan-urotropine fantan, iriphan, tolysin, weldona, and farastan, are all congeners of cinchophen. Atoquinol (atochinol) is a derivative of cinchophen. Harrell Rheumatism cure.

Predisposition: Predisposed are those with gall-bladder disease, cirrhosis of the liver, pregnancy, chronic alcoholism, chronic nephritis, those who in the past have suffered from liver disease associated with jaundice, and those showing other evidence of cinchophen intolerance. The drug seems particularly dangerous in states of hepatic damage accompanying starvation, malnutrition, cachexia, chronic infection, or tonsillectomy, after fevers, or in conditions which have decreased glycogen content of the liver cells. It has been definitely proved that, under these conditions, there is greater tendency to liver degeneration. (Rabinowitz).

C. E. YOUNT.

# MINUTES OF THE SEVENTEENTH ANNUAL SESSION OF THE MEDICAL AND SURGICAL ASSOCIATION OF THE SOUTHWEST

Phoenix, Ariz., December 3 to 5, 1931.

The Seventeenth Annual meeting of the Medical & Surgical Association of the Southwest opened its first session in the convention hall at the Hotel Westward Ho, Phoenix, at 10:05 a. m., Dec. 3, with Dr. W. R. Jamieson, of El Paso, president, in the chair. Bishop Walter Mitchell, who was on the program for the invocation, was unavoidably absent from the city and Dean Lane of Trinity Cathedral functioned in his stead.

The Address of Welcome was given by Hon. Geo. W. P. Hunt, Governor of Arizona, who addressed his remarks to the physicians generally of Western Texas, Arizona, New Mexico and northern Mexico, calling attention to the fact that we live in the healthiest climate in the world, represent a not inconsiderable place in the achievements of medicine in which America has taken a great part. These achievements have resulted in suppressing and extinguishing some of the diseases which have ravaged the world for centuries.

He stated that it was a privilege to come and discuss health matters and to welcome the Association to Arizona. He recalled the fact that owing to the achievements of medicine the span of life has been extended ten years or longer in comparison to what it was fifty years ago. Every one should appreciate this and the Association is to be congratulated for what has been accomplished in this southwest, which has no inconsiderable place in the achievements of American medicine. America has taken a great part in suppressing and extinguishing some of the disease plagues which have ravaged the world for centuries. The governor stated that while serving as minister to Siam, he had opportunity to observe some of the work which American doctors were doing along this line in attempting to eradicate diseases which had been prevalent among those people since Bible times. In the Sandwich Islands there is a colony of lepers where American doctors are working. Hope was expressed that our deliberations would result in great good to the people we serve. Arizona is glad to welcome the Association to our beautiful city and state.

Response to the Address of Welcome was given by Dr. James J. Gorman of El Paso.

The President's Address was delivered by Dr. W. R. Jamieson, the subject of his paper being "Aeronautics and Medicine."

Dr. J. Mott Rawlings of El Paso followed with a paper on "Childhood Tuberculosis."

Dr. Arthur L. Rertzler of Halstead, Kansas then gave an address on "General Principles in the Management of Goitre."

Final paper of the morning program was given by Dr. D. L. Arnold on "Use of Insulin in the Treatment of Anorexia and Malnutrition."

At the Clinical Luncheon impromptu talks were given by Drs. A. L. Hertzler, Alexius Forster, W. A. Gekler, W. R. Jamieson and S. C. Davis.

Scientific Session was resumed at 2 p. m., the first paper being by Dr. W. E. Vandevere of El Paso on "Electrocautery in Tuberculosis of the Larynx."

The second paper of the afternoon was by Dr. Victor Randolph of Phoenix, on "Extrapleural Pneumolysis." A discussion of all the papers on tuberculosis was participated in by Dr. F. C. Jordan of Phoenix, Dr. Fred G. Holmes of Phoenix, Dr. D. R. Gaskins of Phoenix, Dr. W. L. Rogers of San Francisco, with closing discussion by Dr. Victor Ran-

At the Thursday Evening scientific session, the first presentation was by Dr. A. M. Forster of Colorado Springs, on "Heliotherapy", this being in the form of a moving picture.

Dr. W. A. Gekler of Albuquerque, then presented

a paper on "Chemotherapy in Tuberculosis."
Dr. Fred H. Kruse of San Francisco gave the third paper of the evening, on "Jaundice: A Differential Study of the Types and of the Aids in Diagnosis.`

At the opening of the Friday a. m. meeting, Dr. Jamieson announced the follwing committees:-Necrology, Drs. Howell Randolph, Ralph Homan and W. A. Gekler; Resolutions, Drs. M. K. Wylder, R. D. Kennedy and Orville Egbert; Place of Meeting, Drs. W. R. Lovelace, C. W. Swackhamer, J. Mott Rawlings.

Scientific session was opened by the paper of Drs. V. G. Presson and R. A. Wilson of Tucson, read by Dr. Presson, on "Intestinal Allergy and the Sequelae."

The second paper in this group was presented by Dr. George Piness of Los Angeles, on "Problems and Management of Intractable Asthma."

Dr. Roy M. Balyeat then gave a discussion of "Allergic Migraine: Its Diagnosis and Treatment."

The three papers on allergic conditions were discussed as a group by Dr. E. W. Phillips of Phoenix, Dr. W. W. Wilkinson of Phoenix, Dr. O. H. Brown of Phoenix, Dr. Christiansen of Globe, with closing discussions by Dr. V. G. Presson, Dr. Piness and Dr. Balyeat.

At the Firday p. m. session, the first paper was by Dr. N. W. Barker of Rochester, Minn., on "Nephrosis." This was discussed by Drs. Paul Holbrook, W. R. Jamueson, Paul Guttman, Frank J. Milloy with closing discussion by Dr. Barker.

Dr. Paul Holbrook of Tucson then presented paper on "Chronic Arthritis." This was discussed by Dr. Ellis Jones, Dr. J. M. Greer, Dr. James Moore, and

Dr. Edgar H. Brown.

The general business session of the Association was held immediately following the Friday afternoon scientific session.

The reading of the minutes of previous meeting was dispensed with as they had been published and sent to all members.

The report of the Secretary-Treasurer was presented verbally. This showed a total membership on December first of 285, of whom 70 have not yet paid dues for 1931. We have lost during the year, five members by death, four by virtue of being unable to locate, thirteen by resignation and eleven for non-payment of dues, a total of thirty three.

Although there are slightly fewer members on the roll this year than last year, this is partly due to the fact that no effort whatever was made during the year to add new members. In spite of the loss in membership, the revenue from dues (due to the increase of dues from \$3.00 to \$5.00) is considerably greater, and has enabled the Association to carry on its work without deficit, and to have a small talance in the treasury.

The report of the Committee on Necrology was presented by Dr. Howell Randolph, chairman, as follows:

### (To be published separately)

The Report of the Committee on Resolutions was presented by its chairman, Dr. M. K. Wylder, and

The report of the Committee on Place of Meeting was to the effect that they recommend the acceptance of the invitation of Albuquerque for the 1932 This recommendation was unanimously meeting.

At this time the amendment to the constitution proposed at the El Paso meeting was introduced for action, this reading as follows:

After discussion, vote on this amendment was called for and resulted in the adoption of the amendment.

Amendment to Article V, Section 3 of the Constitution:-

"There shall be a president-elect who shall take office at the evening meeting of the first day of the regular annual meeting. The president shall hold office until he delivers his address as retiring president, following which the president-elect shall be inducted into office and deliver the president's address.'

As the result of the adoption of this amendment, the office of president of the Association will remain filled by Dr. W. R. Jamieson until the Albuquerque meeting, and the Association was called on to elect a President-Elect, who will take office as president at the 1932 meeting. Dr. F. D. Vickers, of Deming, N. M. wsa placed in nomination and there being no further nominations he was elected by viva voce

Dr. W. A. Gekler of Albuquerque was nominated and elected as first vice-president.

Dr. Orville H. Brown was nominated and elected as second vice-president.

Dr. W. Warner Watkins of Phoenix was nominated and elected as secretary-treasurer.

At the Firday Evening social gathering, following the banquet, Dr. M. K. Wylder of Albuquerque, presented an address on "The Effect of Heredity" Environment and Early Habits in the Development of Personality."

On Saturday forenoon, the scientific session was opened by a paper by Drs. W. L. and C. P. Brown of El Paso, on "Does the Operative Mortality and Sequelae Justify Operation on Borderline Gall Sequelae Justify Operation on Borderline Gall Bladder Cases?" The discussion was opened by Dr. C. A. Thomas of Tucson, continued by Drs. J. L. McKnight, W. O. Sweek, W. W. Watkins, O. H. Brown, E. Payne Palmer, and closed by Dr. W. L Brown.

Dr. Norman Bethune then presented an address on "Some Procedures in Thoracic Surgery."

Immediately following the Clinical Luncheon, the Ciscussion of Dr. Bethune's paper was taken up, and following this Dr. W. L. Rogers of San Francisco presented a paper on "The Use of the Kirschner Wire in the Treatment of Fractures."

# Amytal for Insomnia

Insomnia due to hypertension, various psychoses, drug addiction, alcoholism, hyperthyroidism, and restlessness due to various causes indicates the use of Tablets Amytal. In conditions where tranquillity and repose are desired Tablets Amytal (iso-amyl ethyl barbituric acid) may be prescribed in doses of  $1\frac{1}{2}$  to 3 grains. For sedation in ambulatory cases prescribe Tablets Amytal, Half-Strength, ¾ grain.

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Dr. W. S. Sharp of McNary, Arizona., followed with a paper on "Fractures of the Femur." These two papers were discussed by Dr. J. M. Greer.

A telegram from Dr. Kelvin D. Lynch of El Paso, who was on the program for a paper on "Urology in Infancy and Childhood," was read, expressing his regrets that he was detained on account of illness of his wife.

The final paper on the program was by Dr. David M. Davis of Phoenix, on "Diagnosis and Treatment

of Carcinoma of the Prostate."

This closed a very excellent program and meeting adjourned sine die.

### CLINICAL PROGRAM

The surgical and medical clinics presented by the Maricopa County Medical Society members were not very extensive but were instructive and thoroughly enjoyed by those of the members and guests who attended them.

### SURGICAL CLINICS

Dr. Victor Randolph had clinic on lung abscess at St. Joseph's Hospital Friday morning and on extrapleural pneumolysis, intrapleural pneumolysis and phrenicotomy on Saturday morning.

Drs. W. A. Schwartz and B. L. Melton held clinics on tonsillectomies and adenoidectomies Friday morn-

ing at St. Joseph's Hospital.

Dr. John J. McLoone had clinics on tonsillectomies at St. Joseph's Hospital Firday morning, and on submucous resection and Caldwell-Luc radical antrum operation Saturday morning at the same hospital.

Dr. J. H. Patterson had clinic on suspension operation and appendectomy Friday morning at St. Joseph's Hospital.

Dr. David M. Davis held clinic on prostatectomy

at Good Samaritan Hospital on Friday.

Drs. O. W. Thoeny, Lon A. Browning and James J. Johnson held clinics on tonsil, adenoid and eye muscle operations at the Social Service Center on Friday

Drs. Joseph M. Greeer and Palmer Dysart held an orthopedic clinic at the Social Service Center on

Saturday.

### MEDICAL CLINICS

On Friday morning, Dr. Fred G. Holmes held a medical clinic at the Assembly Hall of the Westward Ho on the Treatment of Cavities in Pulmonary Tuberculosis, discussing and illustrating all the old and new methods of eliminating cavities.

On Saturday morning, Dr. Orville H. Brown held a clinic at the Assembly Hall on Treatment of Food Sensitization and Allergy, with special reference to

use of digestants and diet regulation.

### SOCIAL ENTERTAINMENT

The entertainment of the visiting ladies was in charge of the Ladies' Auxiliary of the Maricopa County Medical Society. There was a progressive bridge party Thursday evening, the groups going from one residence to another of several of the entertaining ladies. A luncheon was held on Friday and the ladies joined the men at the dinner-dance on Friday evening, at the Hotel Westward Ho.

The clinical luncheons each noon were greatly enjoyed, combining a social hour with clinical discus-

sions.

A list of the members of the Association follows, those appearing in bold face type being paid up members for the year 1931.

Adams, C. W., Globe, Arizona Adamson, E. W., Douglas, Ariz. Allison, Dwight, El Paso Armbruster, A. C., Phoenix Arnold, D. G., El Paso Austin, C. P., Lordsburg, N. M. Macon, John E., Miami, Ariz. Bailey, H. T., Phoenix Bakes, E. C., Phoenix Bannister, K., Phoenix Barnes, F. M., El Paso Barrett, F. O., El Paso Berger, B. M., Phoenix Bessette, A. E., Albuquerque Bledsoe, N. C., Tucson, Ariz. Bloomhardt, S. I., Phoenix Bouldin, T. J., St. John's, Ariz. Bradley, R. L., Roswell, N. M. Brazie, W., Kingman, Ariz. Brehmer, H. L., Albuquerque Bridge, G. A., Bisbee Britton, J. M., El Paso Britton, W. W., El Paso Brockway, G. M., Phoenix Brockway, G. M., Phoenix Brown, C. P., El Paso Brown, C. W., Phoenix Brown, E. H., Phoenix Brown, O. E., Tucumcari, N. M. Brown, O. H., Phoenix Brown, O. S., Winslow, Ariz. Brown, R. O., Santa Fe Brown, W. L., El Paso Browning, L. A., Phoenix Brunner, Geo., El Paso Burtch, L. A. W., Phoenix Butler, P. M., Winkelman, Ariz.

Byrd, E. L., Clint, Texas Camp, Jim, Pecos, Texas

Carhart, W. G., Whipple, Ariz.

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CRUM EPLER, M. D. Superintendent

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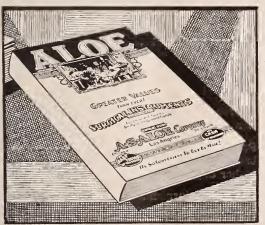
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# AMERICAN COLLEGE OF PHYSICIANS (SAN FRANCISCO—APRIL 4-12)

The Program for the Sixteenth Annual Clinical Session of the American College of Physicians, to meet in San Francisco the week of April 4, 1932, is virtually completed. Mr. E. R. Loveland, the Executive Secretary, with offices at 133 South 36th Street, Philadelphia, will send out copies as soon as the program has been completed and printed, which will be sometime early in February.

We invite all physicians, irrespective of membership in the College, to attend this Session. The program is of such a character that it will interest everyone, whether specialist or general practitioner. The medical talent of the continent has been called upon and the response is very gratifying. When a Fellow of the College has not been the one best prepared to discuss a topic, a guest has been invited and the College has arranged for his presence in San Francisco. The primary purposes of the College are the encouragement and preservation of high standards, the dissemination of knowledge within its field and the cultivation of the historic and esthetic ground in which medicine, as one of the learned professions, grows. This session will reflect the purposes and ideals thus briefly stated and will be the first to be held west of the Mississippi River. For this reason it should have a peculiar interest for readers of SOUTH-WESTERN MEDICINE, but the interest only begins here. The Session will be attended by the notables in Medicine from the United States and Canada, and the program, we believe, will be the strongest yet presented.

The General Sessions, attended by all, are held every afternoon, Monday to Friday inclusive, and on Monday and Tuesday evenings as well. More

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## GENERAL ASSEMBLIES

Tuesday-

"Gastric and Duodenal Ulcer," Dr. Frank L.Lahey, Boston.
"Sexual Psycho-Neuroses in General Practice," Dr. Joseph Collins, New York.
"The Treatment of Pyelitis," Dr. Herman L. Kretschmer, Chicago.
"Bedside Recognition of Irregularities of the Heart," Dr. Samuel A. Levine," Boston.
"Rentgenological Observations on the Cure of Gastric and Duodenal Ulcers," Dr. Merrill C.

Sosman, Boston.

Wednesday-

Practical Points in the Care and Feeding of Infants, 'Dr. W. McKim Marriott, St. Louis. "The Relationship Between Infections of the Upper Respiratory Tract and Pediatric Conditions," Dr. Lee Wallace Dean, St. Louis.

"Referred Symptoms in Gastro-Intestinal Diseases, and Digestive Symptoms in Other Dis-

eases," Dr. Thomas R. Brown, Baltimore.
"Skin Manifestations of Systemic Disease," Dr. Udo J. Wile, Ann Arbor.
"The Diagnosis and Treatment of Cancer of the Colon," Dr. J. Shelton Horsley, Sr., Richmond.

Thursday-

"The Surgery of Trauma," Dr. Wm. O'Neil Sherman, Pittsburg.

"The Treatment of Empyema with Special Reference to the Chronic Type," Dr. Cari A. Hedblom, Chicago.

"The Toxemias of Pregnancy," Dr. Paul Titus, Pittsburg.

"The Relationship of Opthalmology to the General Practice of Medicine," Dr. Wm. L. Benedict, Rochester, Minn.

"Organic Change Versus Disturbance of Function," Dr. Thos. McCrae, Philadelphia.

Friday—
"The Interpretation of Abnormal Uterine Bleeding," Dr. Edw. H. Richardson, Baltimore.
"The Present Status of Vaccine and Non-Specific Protein Therapy," Dr. John A. Kolmer,

"Neoplasms about the Head and Neck, with Special Reference to the Ear, Nose and Throat," Dr. Joseph C. Beck, Chicago. "Cancer of the Rectum," Dr. Dudley A. Smith, San Francisco. "Food Allergy(" Dr. Albert H. Rowe, Oakland, Calif.

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than sixty papers and addresses will be presented, revealing the trends and covering the best of the recent work in medicine. The physics and physiology of arteriosclerosis and hypertension will be discussed by the man who has made the greatest recent contribution in this field. The practical phases of the subject will be discussed by two able clinicians. Congenital narrowing of the aorta and pulmonary arteriosclerosis will be presented. The effect of funnel breagt on the heart and circulation is studied. Among the subjects of live interest in diseases of the chest are: atelectasis and tuberculosis; the treatment of cavities; some observations on pulmonary emphysema; and the role of bacteria in asthma. Topics on the liver will range from the element of error in the diagnosis of jaundiced patients and a very interesting study of primary carcinoma of the liver in Chinese, to the effect of the administration of glucose and insulin on the glycogen content of normal and pathological livers, and the pathology of the liver in exophthalmic goiter and the Graves' constitution.

The most modern concepts in the diagnosis of Bright's disease, nephritis, and nephrosis are presented. An address on the practical applications of recent discoveries in the field of gastro-intestinal physiology will summarize many years' work of extraordinary value by a master in this field. The clinical aspects of gastric secretions are discussed. The newest experimental and clinical work on the adrenal gland will be presented. Also, the biological and clinical importance of ovary-stimulating substances. There will be studies of calcium metabolism and diseases of the parathyroid gland. The newest knowledge on the nature of epilepsy and its treatment appears.

There are studies on the mechanism of edema formation in disease; on leukopenia; on the action of lenzol, Roentgen rays and radium on the blood and blood-forming organs; on the relation of para-nasal sinus infection to disease elsewhere; on the clinical significance of the atrophic tongue; and on the experimental basis for vaccine treatment of chronic arthritis, with a summary of the results of treatment. Diseases peculiar to the Rocky Mountain and Coast countries will be emphasized in this general program.

The outstanding symposium of the Session will bring to clinicians the results of the almost unbelievable advance in our knowledge of the involuntary nervous system. The anatomists, physiologists, and clinicians will collaborate in this extremely important presentation.

The preceding hasty sketch omits many important contributions, being given only to show the modern trend and wide range of the subjects. One evening only will be given to the history of medicine, with delightful studies on the first aphorism of Hippocrates and on Utopia in Medicine.

While Monday morning will be devoted exclusively to registrations, the remaining mornings, from Tuesday to Friday, inclusive, will be given to clinics and demonstrations in institutions in and about San Francisco. Dr. William J. Kerr, Profeossr of Medicine in the University of California Medical School is General Chairman. The committee includes Dr. Arthur L. Bloomfield, Professor of Medicine, Stanford University Medical School, with a group of clinicians representing the various hospitals and laboratories, together with Dr. N. W. Jones of Portland, Oregon, and Dr. F. M. Pottenger of Los Angeles. The work to be exemplified in this part of the program has never been excelled in any meeting of the College. The very wealth and extent of the material precludes mention of any specific item. The

fields and borderlands of medicine will be explored. The presentations will be eminently practical. There will be opportunities to study the conditions peculiar to, or of greatest importance in, this part of our country, and in addition a number of the noted clinicians throughout the country will take part. The opportunity to study at first hand the work of the Hooper Foundation for Medicial Research, under the direction of Dr. Carl F. Meyer, would alone make attendance at this meeting worth while, but this is only one item in a program of unusual significance.

On one or two mornings, for those interested in the history of medicine in general, or of the far West and Pacific Coast in particular, interesting exhibits and talks will be presented. The writer of this invitation has never seen more thorough and painstaking preparation for a profitable and delightful clinical session than that made by the San Francisco committee.

The session will be attended by Fellows and Associates of the College from the entire United States and Canada, but it is the desire of the College that the opportunity be given for every physician who desires to attend. The guest fee of \$15.00 includes one year's subscription to the Annals of Internal Medicine, the official journal of the College, in which the papers and addresses read during the Session will be published.

A cordial invitation is extended to the readers of SOUTHWESTERN MEDICINE to attend this Session. Provision has been made by the local committee for entertainment of friends and members of the families of Fellows, Associates, and guests at the meeting.

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The classical triad of headache, vomiting and choked disc is seldom found in entirety. The presence of one of these conditions with gradually progressing neuro-logical symptoms, is sufficient to warrant the diagnosis of potential tumor, and every step should be taken to determine the presence and location of a tumor mass.

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Time was that mother raised them in a rather casual way, With a bit of help from grandma—but that isn't done today; The bringing up of babies is a far from simple art And you need a dozen volumes and a blueprint and a chart, A clinical thermometer, a stethoscope, a scale, Some test tubes, and a dictaphone that registers each wail; The modern mother's regimen is very far from mild, For the baby of the present is a scientific chlid!

Oh yes, I am describing the modern baby now!

Oh, the old folks sniff about it and the jesters jest a lot
But the modern type of baby is a healthy little tot,
He may be robbed of baby-talk, of many pats and kisses,
But there's a heap of colic and other ills he misses;
And in spite of all the sentiment that in our cosmos lurks,
There isn't any question that the modern method works—
For the scientific baby is a husky little tad.
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Volume XVI

February, 1932

No. 2

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(6 Servings)

	Grams	Pro.	Fat	СНО	Cal.
1 tablespoonful Knox					
Sparkling Gelatine	7.	6.			
1/4 cup cold water					
1 cup milk	240.	7.5	10.	12.	
3/4 cup water					
2 eggs	100.	13.	10.5		
1½ teaspoonfuls vanilla.					
l tablespoonful sugar	8.			8.	
			_		
		26.5	20.5	20.	370.5

Soak gelatine in cold water. Heat \$\frac{3}{4}\$ cup water and milk—add gelatine and stir until dissolved. Separate eggs and beat yolks to lemon color. Pour hot gelatine mixture slowly into egg yolks, cook over hot water until mixture begins to thicken, stirring constantly. Remove from stove, add salt, and flavoring. Cool. When nearly set fold in whites of eggs which have been beaten stiff. Mold and chill.

#### LEMON DESSERT

(6 Servings)

	Grams	Pro.	Fat	СНО	Cal.
1 1/2 tablespoonfuls Knox					
Sparkling Gelatine	10.	9.			
1/4 cup cold water					
21/4 cups hot water					
Grated rind 1 lemon					
4 tablespoonfuls lemon					
juice	40.			4.	
2 tablespoonfuls sugar	16.			16.	
		9.		20.	116

Soak gelatine in cold water. Add lemon rind to water while heating to boil. Pour over the soaked gelatine to dissolve it. Add lemon juice and sugar; stir until sugar is dissolved. Strain into molds and chill.

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#### THE INFLUENCE OF HEREDITY, EN-VIRONMENT, AND EARLY HABITS IN THE DEVELOPMENT OF PERSONALITY

MELDRUM KEPLINGER WYLDER, M. D., F. A. C. P. Albuquerque, N. M.

(Read before the Seventeenth Annual Meeting of the Medical and Surgical Association of the Southwest, held at Phoenix, Ariz., Dec. 3-5, 1931.)

It goes without saying that the most important job any of us have, or ever will have, is the raising of our children, but we often get so interested in our problem of making a living that we neglect our principal function in life and allow our children to grow up like weeds.

We want them to be healthy and strong, to be a litt'e ahead of the height and weight tab'es for their ages, even though we are runts ourselves; but more than all that, we want them to be liked, to be pleasant, to make friends easily, to be systematic in their work and their play, to take good care of their toys, rever to treak or lose them; to stand up for their rights and not allow anyone to impore on them—and yet never to bur' anyone's feelings,—to make good in their studies and to excel in athletics. These are only a few of the common, almost universal, aspirations and ideals that parents have for their chi'dren. In short: we want them to dive op this intangible something we speak of as "personality".

What is personality? I think that every one who has written on the subject has given at least one definition and when you see so many definitions, one thing is self-evident—that none of them are satisfactory. In the same way, you see hundrads of remedies recommended for asthma and it does not make much difference which one you use, the patient never gets over it anyway. While for itch only one remedy is recommended and it works. So, I am going to add to the problem by offering another definition. Personality

is that something about you that makes people like, respect, and have confidence in you, or it makes people dislike, and have no respect for, or confidence in you. Thus, you see, personality is either negative or positive and we get all grades. No two personalities are ever alike. Should we develop a race in which strong, positive personalities were the rule, our army would be all generals and there would be no one to police the camp.

What factors enter into the formation of personality? And what are the deciding influences? Whether heredity or environment is of the greater importance, will never be settled. From the very beginning of our existence, hereditary tendencies are being constantly influenced by environment. says, "A certain original endowment is inherited but this is not personality. It is the basis, the foundation on which personality is The moment a child is born the environment begins to act on his rapidly developing plastic nervous system, conditioning certain responses and establishing certain types of behavior. These reactions to the stimuli of environment create the personality." The influences of both heredity and environment are at work constantly and you might just as well ask a gardener which is the most important, the seed, the soil, the water, or the climate. All are necessary; all must be right to rroduce the best products neither good seed in poor soil, nor poor seed in good soil—and then, it must be watered and tended. The nights must not be too cold nor the days too bot and, if any one factor fails, the whole thing fails.

I think Kirkpatrick' sums it up pretty well in these words: "From the individual standpoint, heredity should neither be ignored as of no importance nor yielded to as inevitably fixing one's destiny. Instinctive and hereditary tendencies are the roots from which the physical, mental, and moral life develops. Some individuals develop more rapidly and

to a greater degree than others. All are of the same human characteristics but each makes himself out of his environment. Some cannot go as far as others in certain directtions, nor as easily, but no one has ever exhausted his possibilities of development."

The practical problem is to expend our efforts on the useful characteristics that we do possess in the greatest degree. Whether we inherit such traits as honesty, dishonesty, selfishness, industry, laziness, or jealousy, from our parents, is impossible to state; however, we see such traits running in families. You often hear such remarks as this: "He can't be believed; his father was an awful liar."

Karl Pearson' says: "We inherit our parents' tempers, our parents' shyness, our parents' consciousness and ability, as we inherit their stature, form, and standing." While, on the other hand, Henry George' says: "The influence of heredity, which it is now the fashion to rate so highly, is nothing compared to the influences which mold the man after he comes into the world." These authors are quoted, not for the purpose of settling the question, but rather to emphasize the fact that the question has not been settled.

I think that we, as parents, teachers, and physicians, are apt to mislead ourselves by using heredity as a cloak and not analyzing the question and getting all the facts. exasperated teacher who has failed to put over an illustration in such a way that the child gets it, instead of admitting her own failure, says: "Oh, he is dumb—his father and mother are both morons." A tired, exhausted mother, after one of her children has exhibited a temper tantrum arousing his interest in something else might have detoured him around it instead of through it) finds solace in saying, "You can't expect anything more from him: he's just like his dad; his whole family are like that." Gluck emphasizes this danger of excusing our failures by blaming them on the ancestors, in these words: "Considerable mischief can be done to childhood through an unwarranted emphasis upon the hereditary burden that might be present if one ignores that caution which our limited knowledge calls for." When a parent or teacher sees in the behaviour of a child merely the reflection of something that was characteristic of some one or more of its ancestors, the immediate determining factors are apt to be ignored. The problem is apt to be viewed as a problem in predestination, which usually leads to the attitude of despair and failure instead of calm and endeavor to correct the situation. Moreover, the attitude

of the anxious parent or exasperated teacher is bound to add its deleterious effects on the personality of the child to whatever factors may be already present.

The difficulty of evaluating the infuences of heredity and environment is well illustrated by Thom in a pair of twin boys. one was dull, listless, and apathetic. He took no notice of his surroundings, while the other was alert, active, his eyes sparkled, and he noticed every movement or noise; he cried a great deal if not taken up and had temper tantrums. These were identical twins, same heredity and in exactly the same room, but the environment was exactly opposite, for the family, friends, and neighbors always noticed, played with, and took up and exhibited the bright, alert, and nervous baby, thus exaggerating his already nervous tendencies, and they ignored entirely and took no notice whatever of the dull and apathetic chi'd, depressing him further and further into his lethargy. Thus you can realize that no two individuals can ever have exactly the same environment.

Aside from heredity and environment, we are what we are, on account of habits. When we were born, we were born without habits and we began at once to acquire them. Some one has said that we spend the first three years of our lives forming habits and the rest of our lives trying to break them. Whether the habits that we form are to be helpful or hurtful depends almost entirely on the training we receive. The earliest experiences of a child are the most important because paths are made by stimuli. These paths follow a course involving psychic, physical, and nerve mechanism associated with endocrine reaction. Such paths are most sensitive and the obliteration of a once well-established, psychic - physical, nerve - endocrine path is impossible. We might imagine every impression from the first to the last, though they number billions, to have created paths from without inward. Associated with these paths are all possible degrees of emotion. The repetition of any stimulus deepens and breadens these paths and they become fixed and thus, at a very early age, we acquire habits of punctuality, regularity, obedience, ronesty, integrity, industry, and thrift; of content and satisfaction, if the habits we form are of the most desirable kind. On the other hand, they may be just the reverse.

The routine of the simplest existence constantly makes demands upon the habits that we acquire in early life; the time we get up, the daily bath, our forms of exercise and recreation, the extent to which we indulge our appetites, our attitude toward our associates and those with whom we come in

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contact. We are scarcely aware that our decisions are largely guided by that unseen force called habit.

Habits associated with character are of the greatest importance. I may mention honesty. A child who acquires the habit of honesty saves himself many problems. He does not have to ponder over the question of whether to tell the truth or not. He will tell the truth and do the square, honest, manly thing unhesitatingly. We are all hero worshipers. We all heard, among the first stories that we can remember, the one of George Washington—the boy who never told a lie. I heard it, and so did you, and I well remember the first time I visited Mount Vernon. As I stood with bared head before that most sacred American shrine, that little brick enclosure that bears this simple inscription: "Within this enclosure lie the remains of General and Mrs. George Washing-

The first thought that came to my mind was not of the great general, military genius, statesman and Father of his Country, but that he was the boy who never told a lie. And it was, in all probability, on account of this early formation of the right kind of habits, the sterling habits that go to make up character and personality, that he became the great man that he was.

Habits make demands for certain kinds of activity. They rule our thoughts. Habits that go to build the desirable type of personality must be acquired early. They are not like long trousers, to be put on at a certain age. They are matters of growth and development. The mental characteristics and moral qualities that go to develop success or failure are, to a large extent, matters of habit. Ambition, thrift, persistency, fairness, cleanliness, laziness, selfishness, carelessness, distinctiveness, and numerous other traits of character that go to make up personality, are not inherited. Tendencies in their direction may be, but, unless they are developed by stimulation they remain impotent in their effect on personality.

The doing a thing over and over gives no positive assurance that the habit will be long continued, and it will not be unless the child gets, as a result of the accomplishment, some emotional satisfaction. The amount of emotional satisfaction the child obtains from learning proper habits of eating, eliminating, and obedience, is derived to a great extent directly from those whose approbation is most desired. All children have not the same desire for praise. They are not all well endowed with that personality trait which would make them want to please. Other incentives must be used. Reward,

praise, blame, and punishment must all be used at times in an effort to develop for the child a personality that will help him to assume the responsibilities of life. The child should be led, not pushed. Too often it is the emotions, and not the intellect, that impede the formation of proper habits.

Encouragement is the most powerful instrument we have. Encouragement is something we all need. Usually the best physician is the one who succeeds best in encouraging his patients. By encouraging a child you can make him do wonders. We have all read some of the letters of the late Colonel Roosevelt to his boys; they were published after his death. We are struck in a number of letters with the father's way of bringing out the best in his children. His conjuring up, by a mighty expectation, qualities which undoubtedly were in the children anyway, and bringing them to the fore by a mighty taking for granted that amounts almost to hypnotism. "I know you are studying hard," he writes one son, though in the next letter he says he is puzzled by the low marks. He suggests an explanation himself, however, in no way reflecting on the boy's industry and ability. "I have faith in your energy," concludes a letter that might have been concluded in another way, "in your perseverance, your ability and in your power to force yourself to the front, when you have once found out and taken your line." And again, "You have gone in with a serious purpose of doing decently and honorably, of standing well in your studies and getting the respect and liking of your classmates so far as they can be legitimately attained." All through these letters of Theodore Roosevelt to his children, breathes the spirit, "I believe in you". The children of such a father could not fail. We cannot but contrast that with the other parental attitude, altogether too common, that the child is always to blame, mostly in the wrong, being a child. The parental power of suggestion goes a long way toward pulling down or building up the personality of the chi'd yet in the making.

Undue concern on the part of the parents often causes marked changes in the personality of a child. After a serious accident or illness which has placed him in danger and caused anxiety in the household, it is difficult for parents to control him wisely. They may cease to exert authority, fearing harm will result, and it takes only a short time for a child to learn that with his symptoms he can control his environment. Over-solicitude often defeats its own ends by creating such an intense emotional situation that the original difficulty is only exaggerated. The attitude that many parents take of expecting

undesirable conduct and of inability to cope with it, has a strong influence in children. If it is constantly suggested that Bill can not eat what other children eat, or that he will not stay in the yard, there is no cause for surprise if Bill runs away at every opportunity. Children want attention and will attain it somehow.

It is not my intention to leave the impression that the influence of the home is destructive to the personality of the child, but rather to emphasize the tremendous influences, constructive or destructive, wielded in the home and the terrible responsibilities and opportunities that are on the shoulders of parenthood. Since, as we have shown, most habits are formed and fixed in early life, before school age, I do not believe that these children with undesirable habits and delinquent tendencies are the product of an irreparable past over which there is no control. They are largely the result of the environment in which they grow up, and the dominating feature of that environment is always the parent.

The formation of personality, then, depends more than anything else, and more than everything else, upon the parents, and I think that Abraham Lincoln summed it up better than it has ever been summed up by anyone else when he said: "All that I am and all that I ever hope to be, I owe to my sainted

mother.'

#### BIBLIOGRAPHY

1. Swift, Edgar James: Psychology of Childhood, D. Appleton & Co., 1930, p. 45.

2. Kirkpatrick, E. A.: Fundamentals of Child Study, Macmillan Co., 1922, p. 29.
3. Pearson, Karl,: quoted in The Trend of the

Race, by S. J. Holmes, Harcourt Brace, p. 98.

4. George, Henry,:quoted in same, p. 99.

5. Gleuck, Bernard,: Mental Hygiene, Vol. 8, No. 3. 6. Thom, Douglas A.: Everyday Problems of the Everyday Child, D. Appleton & Co., 1930. p. 8.

#### **JAUNDICE**

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To the invaluable knowledge to be gleaned from clinical and roentgen examination of an individual with jaundice, Mann and his associates have emphasized the importance of two great discoveries in their study of the liver, that have aided the clinicians in their classification and interpretation of the various types of jaundice and in applying to practical purposes, both for diagnosis and treatment of these conditions, the newer knowledge of liver function.

These two fundamental assumptions are: 1. That bile pigment (bilirubin) is formed outside the liver and is brought to it for excretion. Until recently it was generally held that bile pigments are formed in the liver from hemoglobin liberated on the disintegration of red blood corpuscles. theory of an extrahepatic origin of bile pigment has become firmly established in present-day physiology.

2. The importance of the carbohydrate function of the liver; namely, that the liver as a vital function stores glycogen (as discovered in 1857 by Claude Bernard) and immediately after the removal of the liver (or theoretically by its destruction or paralysis) the blood sugar decreases progressively. When it reaches a certain rather definite limit, of from 0.06 to 0.04 per cent, a characteristic group of symptoms appears, and, if the decrease is allowed to continue, death soon ensues.

On account of the above conclusions and the light shed by similar work in relation to the liver and jaundice, the tendency has been to simplify our classification of jaundice, clinically, into three groups: (1) obstructive jaundice, including cases in which there is occlusion of or obstruction in the extrahepatic biliary passages; (2) intrahepatic jaundice, including cases where the diseased process is within the liver, affecting the hepatic parenchyma as a whole, or limited to the bile passages or the cells of the liver itself; and (3) hemolytic jaundice, associated with increased destruction of blood cells and subsequent increase in the level of bile pigments in the blood (excessive bilirubin production).

We might pause here to summarize briefly, under these three groups, the various more common diseases and abnormal conditions arising in the body which cause jaun-

dice.

It has been variously estimated that the percentage rating of the above three groups is about as follows: obstructive jaundice cases, 70 to 80 per cent; intrahepatic jaundice cases 20 to 25 per cent; hemolytic jaun-

dice cases, 5 to 10 per cent, of all.

1. Obstructive Jaundice: In a survey of such cases of jaundice at the Mayo Clinic recently, carcinoma accounted for about 25 per cent of these; malignancy of the pancreas was the most common single cause, and tumors of the gallbladder and bile ducts taken together were about half as common. Metastatic lesions and general carcinomatosis accounted for about 7 per cent of all cases of jaundice. Of the benign lesions, stones in the common bile duct were responsible for 20 per cent of all jaundice cases; and stricture of the common or hepatic ducts, 10 per cent. This stricture occurs most frequently as an aftermath of operation, but

may develop spontaneously from inflammatory causes, or may be of neoplastic

origin.

Compression of the ducts may occur from tumors in any of the neighboring organs, or in the liver itself, or from aneurysm; or kinking or torsion of the ducts may occur from ptosis or abdominal tumors, such as the pregnant uterus, and so forth. Often pressure and obstruction of the ducts in the liver occur from abscesses (such as amebic abscess), tubercles, gummas, hydatid cysts, and primary and secondary new growths in the liver, which may give true obstructive iaundice, and, in addition, give rise to a hepatitis or disease of the liver cells, thus adding the intrahepatic element to the jaundice, to confuse the picture.

Chronic or hemorrhagic pancreatitis may be the cause of the jaundice in association

with a diseased gallbladder.

In a recent review, twenty cases of jaundice were due to stricture of the common duct, and nineteen of these had had previous operations on the biliary tract. The degree of jaundice as shown by the serum bilirubin or icterus index was not great.

2. Intrahepatic Jaundice (Toxic and Infective): This type of jaundice occurs from the results of bacterial infection or the damage done by some chemical, drug, or other toxin, to the liver tissues and cells. The pathology varies from simple cloudy swelling and congestion to acute inflammatory and suppurative processes or actual dissolution and destruction of extensive areas within the liver parenchyma, termed hepatolysis. The disease groups range in intensity from a simple catarrhal jaundice to the destructive processes of acute yel'ow atrophy. One of the most common forms is a hepatitis (of various degrees). All cases of gallbladder disease have an associated hepatitis, mild or severe in intensity. As the damage increases or persists, there develops chronic cholangeitis, suppurative cholangeitis, and suppurative heratitis, or liver abscess.

As I have said above, we most commonly think of intrahepatic jaundice as being infective or toxic in origin.

The infections or bacteria reach the liver by the blood stream, by the lymphatics (especially from diseased gallbladders), and by the ascending route from the duodenum and ampulla of Vater. These bacteria produce a hepatitis. The hepatitis may occur first and lead to a secondary gallbladder infection, but, in any event, the gallbladder once infected leads to repeated infective shocks of the liver, producing a hepatitis, after a period of cloudy swelling and congestion, and is the most frequent cause of chronic cholangeitis and, final-

ly, suppurative cholangeitis, all producing jaundice. Bacteria from the appendix or other foci of infection in the abdomen, from foci in the head (nose and throat or teeth), from a septicemia, may be etiological factors, as well as in association with pneumonia or typhoid fever; but infection of the liver is rendered much easier of accomplishment by local disease of the biliary tract.

Indeed, aside from virulent infection, it is doubtful if infection of the biliary tract ever occurs in the absence of local biliary disease, since the free flow of bile is usually considered an effective preventive of biliary infection. In the great majority of cases, suppurative cholangeitis is definitely related to local disease of the biliary tract, such as gallbladder disease or acute impaction of stones in the ducts; and this kind of cholangeitis of varying grades not infrequently follows as a sequel of cholecystectomy. In either a latent or severe form, it may antedate surgery. It more commonly occurs, however, as a result of a residual hepatitis.

In hepatitis, fever may be constant or intermittent; chills may be irregular. Jaundice is practically always present, variable in degree. It may vanish with periods of drainage and recur, but is generally slight or moderate only. Often there is a dull aching in the region of the liver, which is enlarged and continues to enlarge. A leukocytosis develops with the febrile periods, and generally is absent in afebrile periods.

Toxic jaundice has developed from certain internal poisons (toxins of endogenous origin) as in pregnancy and toxic hyperthyroidism (in both cases frequently resulting in acute yellow atrophy of the liver); but chiefly from intoxicants or tissue poisons, such as phosphorus, arsenic (especially Fowler's solution and salvarsan), atophan or cinchophen and its various compounds, chloroform, pieric acid (and certain other nitrophenols), yatren, trichlorethane, trinitrotoluene, snake venom, lead, and phenylhydrazine. The liver has suffered from the above in various degrees, from an apparently mild toxic hepatitis or catarrhal jaundice, with recovery, to a serious destructive process with necrosis and dissolution of liver cells, better perhaps described as a hepatolysis. In the more destructive or extensive cases of hepatolysis, vellow atrophy results.

In this intrahepatic classification we find cases of bil'ary cirrhosis, even to the hypertrophic or Hanot's cirrhosis, as well as the jaundice of syphilis. Abscess of the liver from various septic foci, and the tropical or amebic abscess may lead to a secondary hepatitis and thus an intrahepatic jaundice.

3. Hemolytic Jaundice: The outstanding

disease entities to be grouped here are: (a) chronic hemolytic icterus, with splenomegaly (especially the familial form); (b) von Jaksch's anemia; (c) the icterus of pernicious anemia and related anemias and that associated with certain parasitic diseases; and (d) icterus neonatorum.

While a 'arge percentage of cases due to the above disorders present, clinically, features that render them easily distinguishable, frequently they do not; and it is almost impossible by history, physical and roentgen-ray examination to determine the origin of the jaundice, particularly if we are unable to secure an intelligent and exact history.

Again I should like to emphasize the importance of an exact history in reference at least to the presence or absence of pain and its character when present. However, while it must be recognized that the distinction of "pain'ess jaundice" and "painful jaundice", both as to history of onset and course, may be the deciding factor for diagnosis—there are enough exceptions, both ways to the general rule, to lead us to look for other evidences confirmatory of the impression gained from the history and physical examination.

Judd and Marshall, in reporting a series of 1608 patients with stone in the common bile duct, found in forty (2.4 per cent) no pain occurred at any time in the course of the disease; while, on the other hand, I have seen cases of cholangeitis or hepatitis occurring several months after removal of the gallbladder, with pain simulating that of the colic of gallstones, and have observed cases of jaundice with recurrent pain in carcinoma of the gallbladder.

Since these various cases of jaundice have very different therapeutic indications, and yet when first seen cannot be differentiated by the ordinary examination, we must have clearly in mind other methods of procedure that may give us information and points essential to a working classification. These other procedures or tests, grouped according to the type of information yielded, are:

(1) Tests for the quantity of bile reaching the intestines, as determined by siphonage of the duodenal contents (duodenal drainage).

(2) By the same method, determination of the presence or absence of the pancreatic ferments,

(3) Studies of liver function in respect to excretion, as determined by the van den Bergh reactions, quantitative bilirubin, icterus index, rose bengal dye test, the Graham hepatic-function test as determined by the elimination of phenoltetriodo-phthaleinsod-

ium, and, finally, quantitative urobilinogen estimations.

(4) Studies of liver function in respect to the handling of carbohydrates or the metabolic-function test as determined by modified glucose-tolerance test, and the galactosetolerance.

As to the first two procedures, the duodenal and pancreatic studies, their clinical usefulness and significance is apparent in assisting in determining both the degree and location of the block, and I will not herein enter into fuller discussion of their limitations and possibilities.

As regards the tests for liver function, there is considerable disagreement among those actively engaged in their development in the laboratories, and, among clinicians at large, I have found the utmost confusion as to their significance and hesitation in placing any dependence upon their clinical usefulness.

And yet, in the light of some recent reports and observations, and by comparative studies where these tests have been made in groups of cases in which the pathology has been determined at operation or autopsy, undoubtedly their clinical usefulness has been demonstrated.

#### BILIRUBIN

In order to understand and interpret the excretion tests of liver function, such as the icterus index, van den Bergh, urobilinogen, and the dyes (rose bengal), we must have some conception of the physiology of bilirubin formation and excretion, since, in cases of jaundice, these tests are expressions of the bile pigment (bilirubin) concentration in the blood stream or else, as in the instances of the dyes, their elimination by the liver parallels that of the bile pigment. Mann has pretty conclusively demonstrated the extrahepatic origin of bilirubin in mammals.

We know, from experimental observation and the development of the van den Bergh tests, that the bilirubin carried to the liver from its various sites of origin in the body, is different from that leaving the liver in the bile and therefore that the liver cells are the initiators of this change in physical or chemical state. Utilization of this knowledge as a diagnostic aid has been of most material assistance in the differential classification of types of jaundice.

We might think of the freshly formed bilirubin in the tissues of origin as nascent bilirubin. It is produced extrahepatically at a very rapid rate and travels to the liver by the blood stream. Perhaps, as suggested by Elton, it exists as a suspensoid colloid, and, as such, cannot permeate the cells of the liver parenchyma. Hence, certain cells of

this parenchyma (possibly the Kupffer cells in mammals) act as acceptors and change its state so that the real parenchymal or polygonal cells may complete a final chemical change. Perhaps, as suggested by Elton and others, the bilirubin leaving the liver is a crystalloid. Thus the body would have three forms of bilirubin constantly to deal with: (a) a suspensoid colloid, carried to the liver in the blood; (b) an unstable, changing product in the liver cells; (c) a crystalloid or soluble form leaving the liver by the bile channels.

#### VAN DEN BERGH REACTIONS

At any rate, we generally agree that nascent bilirubin, as it travels to the liver, is changed and is different in character from the bilirubin of the bile excreted from the liver. In diseased conditions, the orderly process of change and elimination is interfered with and the blood stream becames flooded with all kinds of bilirubin, as indicated by the van den Bergh reactions, which may be most helpful if interpreted correctly and the limitations of the tests are recognized, but are usually most confusing and misleading unless properly understood and correlated with other evidence.

If the common duct is ligated, obstructive jaundice ensues, due to flooding of the blood stream with the excretion form of bilirubin,-

crystalloid (?) state.

The van den Bergh reaction is then direct positive. If the liver is removed, jaundice ensues, due to accumulation in the blood of nascent bilirubin—suspensoid colloidal (?) form—or in man, with the liver intact, in hemolytic diseases due to extensive nascent bilirubin production and accumulation, too great for the liver to handle. The van den Bergh reaction is then indirect, demonstrated usually by bringing the bilirubin into alcoholic solution.

These are the only clear and uncomplicated forms of the reaction, and occur only when the liver parenchyma is functioning normally. When the jaundice is prolonged and the liver cells are overwhelmed by intense pigmentary congestion, or if they are affected by disease within the liver, the blood is then flooded with all kinds of bilirubin and the mixed (biphasic) and confusing reactions result, none of which taken alone are diagnostic of any disease entity.

A schematic summary of these conditions and their most likely variations is helpful as a graphic aid in their interpretation. (Figures 1 and 2).

#### THE ICTERUS INDEX

The icterus index may be defined as a physical measurement of the yellow color intensity of serum. The determination is based,

not upon the amount of bilirubin in the serum, but upon the assumption that the color of the serum is largely due to bilirubin.

The ingestion of eggs, oranges, and chlorophyl-containing vegetables, in children, and of carrots, in both children and adults, may increase the index proportionately. The normal icterus index lies between 4 and 6, with an average of 5. As clinical icterus has never been present with readings below 15, and is rarely absent with readings over 15, a reading between 6 and 16 indicates a zone of latent icterus, seen so frequently in gallbladder disease without jaundice. In hemolytic diseases, the icterus index will vary from 6 to 16, or within the zone of latent jaundice. In these diseases, however, the quantitative serum bilirubin will run quite high, entirely out of proportion to the low icterus index, indicating the presence of nascent bilirubin (the so-called colloidal suspensoid), which does not color the serum highly, since it is theoretically not in solution. Beyond the reading of 16, in true icterus, the final, or crystalloid, form of bilirubin formed in the liver and in the blood imparts more intense color, and, as the icterus mounts in intrahepatic or obstructive jaundice, the quantitative bilirubin and icterus index increase proportionately, and a high icterus index indicates a high quantitative bilirubin level.

Relatively high bilirubin values (quantitative) in and near the normal zone of the icterus index were found in sera from patients with familial jaundice and pernicious

#### VAN DEN BERGH REACTION

Direct Positive Direct Immediate	Indirect Direct Negative Direct Delayed
DIAZO REACTION PROMPTLY Typically in early Biliary Duct Block	DIAZO REACTION LATER by adding oxygen or by manipulation 1. Standing 2. Heating 3. Adding Alcohol
OBSTRUCTIVE JAUNDICE Either of these whe	HEMOLYTIC JAUNDICE n prolonged produce

#### BIPHASIC REACTION

Mixture of all kinds of bilrubin

Any intrahepatic damage or congestion Catarrhal Jaundice Hepatitis Yellow Atrophy Toxic Cirrhosis

Fig. 1. Schematic illustration of the van den Bergh reaction in different types of jaundice.

	Blood Stream Liver Parence		arenchyma	Bile Ducts		
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	© % XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	0	0			
	, 'NASCENT BILIRUBIN Colloid ?	CHANGING IMMATURI BILIRUBI	E	FINAL BILIRUBIN Crystalloid ?		
	HEMOLYTIC JAUNDICE	INFECTION TOXINS Catarrh Jauno Hepation Atrophy	nal lice tis	Later All Forms BLOCK OF DUCTS Stones Tumors, etc.		
Van den Bergh	Indirect	Biphasio	?	Direct Early Biphasic Later		
Quantitative Bilirubin	High	Varies Moderate to High		Varies with Degree of Block		
Icterus Index	Low	Varies Moderate	to High	Varies with Block Moderate to High		
Urobilinogen	High	Increased Often High		Negative with Complete block Slight in Partial		
Dyes	Normal	High Ret	tention	Varies with Jaundice		
Sugar Tolerance	Normal	Low		Normal		

Fig. 2. Schematic illustration of the formation of bilirubin and its relation to various tests.

anemia, in placental blood, and in patients suffering from trauma and wounds.

Very high readings in the presence of evident and well-marked clinical jaundice suggest the obstructive type, this being especially true in carcinoma of the pancreas obstructing the ampulla; but parallel readings may be found in catarrhal jaundice and acute yellow atrophy. In jaundiced cases with a definitely increased icterus index, the dye function tests (such as the rose bengal) are generally superfluous, since we know the dyes will be retained if the bile cannot escape. Withal, the icterus index is a most useful functional test of the liver and is of value in demonstrating latent jaundice; in establishing a quantitative index for the degree of jaundice in the various toxic or infectious types; in estimating the degree of retention of bile, in obstructive jaundice, and, finally, in detecting the clearing or subsidence of a deep jaundice; thus distinguishing a benign catarrhal form from a jaundice due to a malignancy, which remains stationary or increases.

#### UROBILINOGEN

The bile pigments that pass through the liver and, via the bile passages, enter the intestine, are reduced in the large intestine by putrefactive organisms into a pigment which is partly excreted with the feces (stercobilin) and partly reabsorbed into the portal circulation (urobilin). It is believed that most of the urobilin passes back to the liver, where it is again utilized. In insufficiency of the liver, urobilin enters the systemic circulation in varying amounts and may be readily demonstrated in the urine. This, of course, depends upon whether or not bile pigments are entering the intestine. If there is a complete block of the bile channels (generally at the ampulla) no bile enters the intestine and there is no production of urobilin to enter the urine. Most of the cases of obstructive jaundice do not have a complete block, and, hence, increased amounts of urobilin in these point also to liver damage or insufficiency. Relatively high urobilin readings are also to be expected in cases of intrahepatic jaundice, due to the liver insufficiency brought about by the character of these diseases.

In hemolytic jaundice, the presence of urobilinogen in the urine is due to the excessive amounts of bile pigments that the liver puts out, and the consequent over-flooding of the liver with both nascent bilirubin, brought by the blood stream, and urobilin, so that the liver is unable to handle all that is brought

to it, resulting in the excess being eliminated in the urine.

Urobilinogen is a chromogen of urobilin formed by reduction of urobilin. The two are otherwise identical, and the demonstration of either in the urine has the same significance clinically.

The test for urobilinogen is more delicate than the fluorescent test for urobilin, is quite simple, and lends itself readily to quantitative estimation.

It is to be remembered that the intestine is the sole source of urobilinogen.

All conditions in which urobilingen is

DISEASES	ICTERUS INDEX	VAN DEN BERGH	BILIRUBIN	ROSE BENGAL	GLUCOSE TOLERANCE	UROBILIN- OGEN
Normal Serum	3 to 6	No Reaction or Indirect	0.1-0.35mgm. No		Normal	0
Latent Jaundice	6 to 16	Varies with Type of Jaundice	Type of Ue4=20 mgm.		Normal	0 to +
Hemolytic Jaundice	P.A.9=16(30) Fam. 15=60	Indirect (Direct Delayed)	1 - 16mgm.+	Generally Normal	Normal	+++
Hepatitis and Cholangeitis with Jaundice	Low ++ to High	Biphasic	l mgm. to High	with Degree Jaundice	Generally Low	++
Common Duct Stone Common Duct Stricture	Moderate++ to High	Direct+ (Early) Biphasic(Lat	4-30 mgm.+	Varies with Degree of Jaundice	Normal to Slight	O _m Complete Block
Liver Abscess	Low ++ to Moderate	Biphasic (Indirect)?	Normal to Low	Normal to Moderate	Generally Normal	0 ++
Salvarsan Jaundice	Moderate++ to High	Biphasic	phasic 4-30 mgm.+ to Ret		Low	0
Carcinoma of Liver	Generally Low ++ to High	cording to Low to to			Normal Occasion-I ally Low	0 ++
Carcinoma (Pancreas (Ampulla	Moderate to High+++	(Early) 1-50 mgm.+ 100 (Biphasie) L		Slight to 100 % Retention	Generally Normal Often Low	0
Catarrhal Jaundice	Moderate to High+++	Biphasic (Direct if Early)	4-30 mgm.+	Moderate to 100%	Low	Early O
Acute Yellow Atrophy	High	Biphasic	Biphasic High 80		Low	0 ++
Chronic Yellow Atrophy	Moderate to High +++	Biphasic	Moderate to High	Moderate to 100%	Generally Normal to Slightly Low	0 ++
Portal Cirrhosis	Normal to	Biphasic (Indirect)	0.1-3.mgm.+	Moderate to 100%	Generally, Low	0
Hypertrophic Cirrhosis	Low to Moderate	Biphasic (Indirect)	13 mgm.+	Moderate to 100%	Generally Low	0
Tàxic Cirrhosis	Moderate++ to High	Biphasic (Indirect)	130mgm.+	Generally High Retention	Normal	0 +

Fig. 3. Tabulation of the various tests in different diseases.

eliminated in excess can be classified in two groups:

- 1. Diseases of liver and biliary tract (especially in parenchymatous change).
  - 2. Hemolytic diseases.

Referring to the first of these, urobilinogen is found in largest amounts in acute and subacute liver changes, and in acute exacerbations of chronic processes. Thus, in catarrhal jaundice there are increased amounts in every case at the beginning and end of the disease; whereas, at the height of the disease, it may be low or absent, due to the more or less complete block at the ampulla. Also, in hepatitis, cholangeitis, liver abscess, malaria, and yellow atrophy, it may be relatively high. In slowly progressive chronic lesions, a high output is not constant. This is probably due to the ability of the liver to carry on its normal metabolic activity by compensatory growth of new liver tissues. This ability, and its effect on sugar tolerance tests, will be referred to later. Thus, in certain cases of cirrhos's, syphilis of the liver. Banti's disease, splenomegalies, and subacute conditions, such as cholecystitis and cholelithiasis, the readings tend to be low.

In summary, the value of this test is emphasized in painless jaundice, as urobilin is always present at some time in catarrhal jaundice; and in mechanical icterus, such as carcinoma of the head of the pancreas or ampulla, its total absence forms a marked diagnostic feature.

#### THE DYE TESTS FOR LIVER FUNCTION

In these tests, the dye selected is injected into the blood stream, and its concentration remaining after certain intervals of time, is observed. These dyes are eliminated from the organism by means of the activity of the liver parenchyma cells and are selected also because they are non-toxic and stain the serum sufficiently. They are eliminated in the bile. The two that have survived and are most widely used are:

- 1. Rose bengal (dijodotetrachlorfluorescein of the triphenyl-methane series).
  - 2. Phenoltetraiodophthalein (sodium). Iso-iodeikon (Graham's dye)

The latter has the advantage of allowing visualization of the gallbladder at the same time (cholecystography). After ligation of the common duct, in animal experimentation, there is no retention above normal for two or three days. The retention of the dye usually coincides with the first evidence of, or appearance of, bile in the blood—that is, two or three days following obstruction of the common duct, and generally reaches a maximum between the second and fourth

weeks. It is obvious, therefore, that the chief cause of failure to eliminate the dye is damage to the liver parenchyma. While, in pure obstruction of the bile passages, the dye is retained as the bile backs up, it is not until the liver cells suffer from stasis congestion and infection following obstruction that the dye is retained in the blood.

Thus, in non-obstructive jaundice from toxins or infections, such as catarrhal jaundice and acute yellow atrophy, the dye retention is quite high, but will lessen as recovery takes place, returning to normal in such cases as catarrhal jaundice and often in arsphenamine icterus. On the other hand, in obstructive jaundice the degree of retention of the dve, if it is not given too late in the disease, is a material aid in differentiation between carcinoma (especially of the pancreas) and stone in the common duct. Associated with stone in the common duct, there is always a hepatitis and much more liver damage, especially early, than in carcinoma, and therefore a higher concentration of the dye in the blood serum.

The Graham dye, in patients with jaundice produced by stone in the common duct, rises rapidly to 30 to 60 per cent retention in 30 minutes, after the first few days of obstruction: whereas, in carcinoma (not terminal) the figures are more apt to be 10 to 25 per cent in 30 minutes.

Evarts Graham found, in cases either with or without jaundice, using the phenoltetraiodophthalein dve, that a high retention (50 per cent or more) indicates a poor operative risk. He likes to treat these cases with high carbohydrates, improved drainage and conservative measures, restoring the liver reserve and glycogen stores until the retention is not over 35 per cent.

In the University of California wards and clinics, we have used the rose bengal test chiefly, but have felt that in well-marked jaundice, the test is generally superfluous and will run parallel to the ictorus index, indicating that the amount of liver damage (at least temporarily) varies according to the depth of jaundice. However, there are undoubtedly a few exceptions to this, but either dye is valuable in estimating the operative risk. Retention of rose bengal in the blood above 60 per cent at the end of 8 minutes and over 30 per cent after 16 minutes, is indicative of decreased permeability of the hepatic cells or of obstruction to the free f'ow of bile.

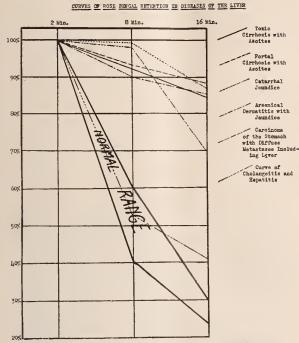
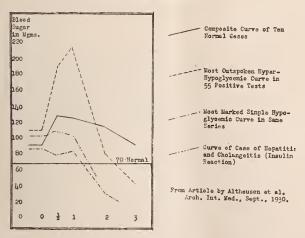


Fig. 4. Diagram illustrating the reaction of the liver to the rose bengal elimination test in various conditions, as compared to the normal range.

In non-jaundice cases, where the liver is suspected, especially those with ascites, since rose bengal is retained to a considerable degree in liver cirrhosis, and so forth, and is not in congestive heart failure or tuberculous peritonitis, a valuable aid in differential diagnosis is secured.

#### MODIFIED GLUCOSE TOLERANCE TEST



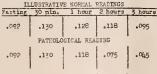


Fig. 5. Chart of the modified glucose tolerance test, as developed by Althausen, showing the reaction in several conditions.

SUGAR TOLERANCE TESTS (Metabolic Test)

There are two notable sugar-tolerance tests:

(1) the modified glucose-tolerance test;

(2) The galactose-tolerance test.

The modified glucose-tolerance test, as developed by Althausen and others, is a simple modification of the dextrose-tolerance test, in which insulin and a large amount of water are given to the patient in addition to 55 Gms. glucose by mouth, and depends on the carbohydrate-metabolism-regulating tion of the liver. Blood sugar readings are made in 30 minutes, 1 hour, 2 hours, and 3 hours after the glucose. A blood sugar level below 70 mg. per 100 cc. of blood at the conclusion of the test indicates a deficiency in the carbohydate-regulating function of the liver. It is not an excretion test and therefore does not always check with the rose bengal. It brings out latent functional impairment of the liver. In combination with a dye excretion test, it helps in indicating the amount of regeneration taking place in the liver and the functional capacity of this new tissue, and thus affords a valuable diagnostic aid in toxic cirrhosis of the liver.

#### THE GALACTOSE TOLERANCE TEST

In this test, pure galactose, 40 Gms. dissolved in 500 cc. of water, is administered orally, and the total quantity of galactose excreted in the urine in five hours is estimated. Outputs of 3.0 Gms. and more have been accepted as indicative of impaired hepatic tolerance. This lowered tolerance has been found positive only in the group of toxic and infective jaundice cases (intrahepatic jaundice) and has not been either so delicate or reliable in individual cases as the modified glucose tolerance tests.

T. L. Althausen, (Archives Int. Med. Oct. 1931) has called attention to the functional aspects of regenerated liver tissue as exemplified in a series of cases of toxic cirrhosis.

Figure 9 illustrates a section of liver showing marked fibrosis of irregular distribution, with an example of liver regeneration, the typical adenomatoid areas of hepatic cells. Figure 10 shows a single adenomatoid nodule of hyperplastic cells, with a great loss of the hepatic substance surrounding it.

In this case the liver had been badly damaged, but the new tissue was able to carry on the carbohydrate-regulating mechanism efficiently, as shown by a normal modified glucose-tolerance curve. However, there was marked retention of rose bengal, which was interpreted to indicate that in spite of regeneration the new hyperplastic nodules lack connection with bile channels and, hence, could not excrete the dye.

The illustrations of figure 7 show a marked destructive process in the liver (acute liver

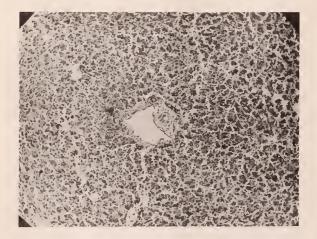


Fig. 6. Section of normal liver, showing histologic structure.

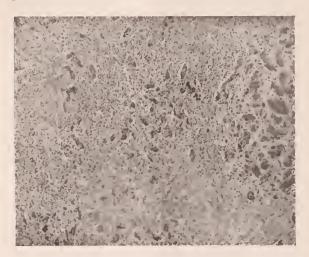


Fig. 7. Section of liver showing the changes produced by acute yellow atrophy (case of atophan poisoning).



Fig. 8. "Obstructive Cirrhosis," due to bile block. Bile distended channels appear as dark areas.

atrophy from cinchophen poisoning). In this case the sugar-tolerance test with insulin showed a pathological curve, and there was marked retention of rose bengal, indicating both an incompetence of the carbohydrate-regulating mechanism and the excretory function of the liver. In the case of the liver shown in figure 8, of so-called "obstructive cirrhosis", there was a normal insulin sugar-tolerance curve and marked retention of the rose bengal. At operation, the liver grossly had all the external characteristics of an advanced cirrhosis, was small, but a carcinoma



Fig. 9. Section of liver showing marked fibrosis, irregularly distributed, with regeneration in form of adenomatoid areas of liver cells.



Fig. 10. Single adenomatoid nodule of hyperplastic liver cells, with great loss of hepatic substance around it.

at the ampulla of Vater was the cause of the condition. There had been a prolonged bile block for months. The icterus index averaged 60, there was no bile in the stool, and no urobilinogen in the urine. The van den Bergh was biphastic.

The liver has a remarkable power of regeneration. If not overwhelmed at first by the acuteness or the rapid progression of a disease, it will replace gradually, at least in part, the substance lost.

In conclusion, it can only be said that, in arriving at a clinical diagnosis in a case of jaundice, a careful preliminary survey of the presenting features, combined with a discriminating selection of the aids to a functional liver study, will be of assistance in a differential analysis—perhaps not indispensable, but at least helpful in the solution, and certainly of intriguing possibilities for a wider understanding of liver physiology and pathological states.

#### REFERENCES

Hepatitis, Deaver, J. B., J. A. M. A., 96:1293, Apr. 18, 1931.

Toxic effects following use of arsphenamine. Cole, H. N. et als, J. A. M. A., 97:897, Sept. 26, 1931.

Significance of urobilogen in urine as test for liver function. Wallace, G. B. and Diamond, J. S., Arch. Int. Med., 35:698, June 1925.

Diseases of the biliary tract. Dixon, C. F., Calif. & West Med., 35:1, July, 1931.

Interrelation of bile pigment and hemoglobin. Editorial, J. A. M. A. 96:1310, April 18, 1931.

Physiology, correlations and technic of the van den Bergh reaction, icterus index and quantitative serum bilirubin. Elton, Norman W., J. Lab. & Clin. Med., 71:, October, 1931.

Functional aspects of regenerated hepatic tissue. Althausen, T. L., Arch. Int. Med., 48:667, Oct., 1931.

Decompensated portal cirrhosis. Chapman, C. B., et als, J. A. M. A., 97:237, July 25, 1931.

Metabolism of galactose. Rowe, A. W. and Mc-Manus, M., Am. J. Med. Sc., 181:777, June, 1931.

Metabolism of galactose. Shay, H., et als, Arch. Int. Med., 47:391, March, 1931.

Galactose tolerance test in differential diagnosis of jaundice. Shay, H., et als, Arch. Int. Med., April, 1931.

A new liver function test. Delprat, G. D., et als, Arch. Int. Med., 34:533, Oct., 1924.

The rose bengal test for liver function. Kerr, W. J., et als, J. A. M. A. 85:942, Sept. 26, 1925.

The rose bengal test for liver function. Epstein, N. N. and Rauschkolb, J. E., Arch. Dermat. and Syph., 14:122, Aug., 1926.

The present status of liver function tests. Althausen, T. L., Calif. and West. Med., 32:53, Jan., 1930.

The rose bengal test for liver function. Delprat, G. D. and Stowe, W. P., J. Lab. & Clin. Med., 16:923, June, 1931.

Surgical Diagnosis (v. III), Graham.

NEPHROSIS

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(Read before the Seventeenth Annual Meeting of the Medical and Surgical Association of the Southwest, Phoenix, Arizona, December 3 to 5, 1931.)

Much confusion and much disagreement have arisen with regard to the classification of diffuse renal lesions. In a given case the clinician is faced with the problem of expressing, in terms of renal pathologic anatomy only, a clinical syndrome which includes the results of laboratory tests, much of which may concern extrarenal factors. Hence has come the multiplicity of terms for similar diseases, and difference of opinion regarding the definition of terms commonly used. The exact etiology and pathogenesis of renal lesions and their extrarenal complications is still obscure but some progress has been made with regard to disturbed bodily functions and chemistry. At present, treatment is based much more on these latter factors than on the diagnosis of the renal lesion it-However, for purposes of classificaself. tion, the attempt is still made to adhere to existing and fairly well-accepted terms descriptive of pathologic anatomy, until more progress is made with regard to etiology.

In order to try to correlate clinical and anatomic findings, we studied clinical data and material obtained at necropsy in 200 cases of diffuse renal disease of various Our control material consisted of types. kidneys obtained at 250 postmortem examinations in which no clinical evidence of renal disease was obtained. This study has been supplemented by clinical data on 250 more cases. From these data we have attempted a classification similar, in a general way, to that of Volhard and Fahr. In such a classification cases of diffuse renal disease are divided into three main groups: nephrosis, in which lesions are of a degenerative type; nephritis, in which lesions are of an inflammatory and proliferative type; and nephrosclerosis, in which lesions are due primarily to vascular insufficiency and chronic ischemia. This paper is concerned with the first of these groups, and is based on our observations in the cases mentioned.

The term "nephrosis" has been criticized as ambiguous, since it simply means "disease of the kideny." It was first used by Friedrich Muller in 1905 to indicate a group of renal lesions of a degenerative type which he felt should be distinguished clinically and morphologically from inflammatory glomerulonephritis. Since then the term nephrosis

has been accepted by a number of students as applicable to all degenerative renal lesions. Many pathologists offer a more serious criticism, namely, that there is no sharp distinction between inflammation and degeneration of the kidney, and even that there is no degeneration without inflammation. Possibly this is a justifiable attack but it reduces almost all renal disease to degrees of nephritis and tends to more confusion. Also, typical nephritis or glomerulonephritis is characterized, even in acute cases, by definite exudation of foreign cells, and by proliferation of glomerular ephithelium and endothelium, and, in more longstanding cases by extensive scarring and destruction of all the functioning elements of the kidney. There is certainly a large number of cases of diffuse renal disease in which these evidences of inflammation are not seen.

We wish to define nephrosis, in its broad sense, as a diffuse renal lesion characterized by noninflammatory, nonproliferative, retrogressive, or degenerative changes in the parenchyma. The changes are usually uniform throughout but are of relatively mild degree. They are most easily observed in the epithelial cells of the convoluted tubules, but the epithelial cells of the glomeruli, and also the basement membrane, may be affected. Many types of degenerative or retrograde change have been described, such as albuminous, hyaline, hydropic, lipoid, amyloid, calcareous, and uric acid. In our experience a very common lesion, which may occur independently or in conjunction with these changes, is diffuse atrophy of the parenchyma, flattening of the epithelial cells of the tubules with maintenance of their definite outlines, and widening of the intertubular spaces due to edema or, in cases of long standing, to a deposit of loose fibrous tissue; usually, but not always, there is some cellular atrophy and shrinkage of the glomerular tuft also. Occasionally this parenchymatous atrophy becomes extreme; sometimes it is very slight. In fulminating cases there may be actual necrosis. It is often impossible to predict the exact type of degeneration from the clinical picture, but in these kidneys definite inflammatory changes are not found.

There are two main groups of nephrosis from the clinical standpoint, the acute and the chronic. The development and clinical pictures of these differ widely, but the anatomic renal lesions may be similar. One clinical characteristic of all types of nephrosis is absence of evidence of cardio-vascular injury, namely, hypertension, retinitis, arteriosclerosis, or cardiac hypertrophy.

ACUTE NEPHROSIS

Acute nephrosis is characterized in general

by two outstanding clinical findings, oliguria and azotemia. Albuminuria and cylindruria are variable, not always striking. Hematuria is rare except in cases due to chemical poisoning. Edema is rare except as a late compication if the intake of fluid has been liberal. Two groups, which can be distinguished by their etiology, are acute chemical nephrosis and acute toxic nephrosis.

Acute chemical nephrosis. The most frequent cause of this condition is ingestion of mercuric chloride. Other poisons which can produce it are uranium salts, chromium salts, arsenic, tartrates, phenol, and fluorides. It has affected patients who seemed to have an abnormal sensitiveness to arsphenamine.

The kidneys are usually large, pale, and tense, and in fulminating cases may contain multiple small hemorrhages. Histologically, particularly in severe cases of poisoning by mercury, the reaction is the most intense found in any of the forms of nephrosis; namely, actual necrosis of the tubular epithelium. with hemorrhages usually around or into the tubules. In other cases there may be only atrophy of the epithelial cells and intertubular edema.

The clinical picture is that of increasing azotemia, and elimination from the kidneys may range from oliguria to actual anuria. The small amount of urine may contain albumin, blood and casts. Cardiovascular changes and edema are very rare, but slight hypertension may occur as a late phenomenon in fatal cases.

Acute toxic nephrosis (acute toxic renal insufficiency). This is one of the most common types of diffuse renal disease. It occurs in the course of many cases of toxemia of high grade, particularly in peritonitis, jaundice, empyema, septicemia, toxic gangene, intestinal obstruction, both of the upper and lower parts of the bowel, pneumonia, malaria, and (rarely) after intravenous administration of foreign protein. The renal changes are not consistent. Occasionally there is little histologic change in the kidneys. Degeneration of the hyaline droplet, hydropic, or lipoid types are occasionally observed. The kidneys are frequently enlarged, pale, and tense, sometimes they are small, soft, and friable. Hemorrhages are unusual. In the majority of cases there is diffuse and definite, but not extreme, atrophy of the tubular epithelium, with some shrinkage of the glomerular tufts, and slight but definite intertubular edema.

The clinical observations in acute toxic nephrosis are oliguria and azotemia. Albuminuria is slight to moderate, if present at all. Hematuria and cardiovascular changes are rare as distinguished from acute glomerulonephritis.

The acute toxic nephrosis of jaundice is perhaps worthy of special mention. We have seen a number of these cases occurring in the presence of cholemic states, particularly in association with the various types of obstructive jaundice. Exactly what precipitates renal failure is not known, for the latter does not necessarily parallel the degree of jaundice. It is sometimes precipitated by a surgical procedure applied to a jaundiced patient. Many of the patients are elderly and somewhat cachectic, and the kidneys of many of them have undergone previous arteriosclerotic injury. At necropsy, the kidneys are not often found to be enlarged, are usually pale greenish-brown, and soft. Histologically diffuse tubular atrophy and intertubular edema are almost constant observations, and the tubular cells usually contain bile pigment.

Treatment. Treatment of all forms of acute nephrosis follows the same plan. the toxic conditions mentioned, early recognition of renal insufficiency is important, and necessitates careful daily records of intake and output of fluid. The cause of the toxic condition itself is usually apparent. In cases of chemical poisoning, as much as possible of the poison should be removed from the gastro-intestinal tract, and efforts should be made to neutralize the remainder. toxic nephrosis, every effort should be made to treat the underlying disease. For the renal condition itself, a diet low in protein and salt (40 Gm. of protein a day) and a high intake of fluid (up to 3,000 cc. a day) are essential. This amount of fluid may have to be reduced if the oliguria persists. If intravenous administration of this fluid is necessary, a solution of 5 to 10 per cent glucose is preferable to physiologic solution of sodium chloride; sodium chloride is not well excreted by these kidneys and may accumulate in the body enough to cause edema, in which case treatment is considerably complicated. An exception to this is the acute nephrosis of obstruction high in the intestinal tract, in which the value for chlorides in the blood is low and administration of physiologic solution of sodium chloride is indicated. The caffeine group of diuretics may aid materially in increasing the urinary output. In chemical nephrosis anuria, a few brilliant results have followed decapsulation. If anuria persists, decapsulation should be considered. A beneficial effect may result, if at operation the kidneys are found to be large, swollen, and congested.

The prognosis in acute toxic nephrosis

is good if the underlying cause can be removed. Normal renal function can be reestablished, and anatomically minimal permanent organic injury would be expected.

#### CHRONIC LIPOID NEPHROSIS

This condition has been well established as a definite clinical syndrome. It seems to affect persons of all ages, but particularly children and young adults. The outstanding observations are generalized edema and albuminuria of high grade; casts may or may not be present. Hematuria, cardiovascular changes, and anemia do not occur. Azotemia is absent in typical cases; whether it ever occurs, even as a late phenomenon, is debated, and its presence should raise a question as to the diagnosis. Lowering of the value for serum protein, with inversion of the albumin-globulin ratio, and increase in the value for blood cholesterol, are almost always found. It is important to remember that all the manifestations mentioned may be found in certain stages of subacute glomerulonephritis, but with the addition of varying degrees of hematuria, azotemia, and cardiovascular change, including hypertension. In chronic lipoid nephrosis the basal metabolic rate may be slightly subnormal. There is rather definitely increased susceptibility to infection. The etiology and pathogenesis of chronic lipoid nephrosis are still debated. One theory, proposed by Epstein and his coworkers, is that the condition is primarily a metabolic disease, in which a toxic protein is formed, which the kidney secretes as it would secrete any foreign protein, and that the kidney itself is little affected except secondarily. A second theory, which Bell advocated, is that primarily a true form of inflammatory glomerulonephritis exists, which undergoes partial healing, but which leaves an injured kidney, with abnormally permeable glomeruli and partly degenerated tubules. A third theory, upheld by Fahr and others, is that the condition is a primary, idiopathic, degenerative renal disease which affects the glomerular epithelium as well as the tubules, and renders the former permeable to serum albumin. It is possible that clinically indistinguishable cases of the syndrome of lipoid nephrosis may be produced in all three ways. In certain cases, the clinical picture of glomerulonephritis subsequently develops and, when patients die, lesions of glomerulonephritis are found. Hence, a given patient should be observed several months before a diagnosis of uncomplicated lipoid nephrosis is made. However, such uncomplicated cases do occur, and as distinguished from chronic glomerulenephritis, the prognosis is good, particularly if treatment is carried out carefully. We have seen a number of cases in which all symptoms and abnormal clinical findings have disappeared. In atypical cases, or cases of mixed lipoid nephrosis and glomerulonephritis, the less the evidence of nephritis (hematuria, cardiovascular changes, azotemia, and anemia), the better the prognosis.

Not many observations at necropsy in cases of uncomplicated chronic lipoid nephrosis have been reported, for the patients do not die of renal failure. The condition may be chronic, and may persist for a number of years, with exacerbations and remissions. When the patients die, the terminal picture is usually that of edema of the brain, cardiac col'apse, and cellulitis of edematous regions, or of infection such as pneumonia, peritonitis, or septicemia. Some cases have been reported in which there were few changes in the kidneys. In our cases, the kidneys have been pale or yellowish, and usually enlarged. The histologic picture is usually that of diffuse, rather uniform atrophy of the epithelial cells of the tubules and glomerular tufts, with or without deposits of fat. Special strains frequently disclose some thickening of the glomerular basement membrane. Fahr described an advanced stage, the so-called nephrotic, contracted kidney.

Treatment is based on the clinical observations, which differ strikingly from those of acute nephrosis, and is particularly directed toward relief of edema. This has been considered previously by Bannick and Keith. With the absence of azotemia, many clinicians feel that a diet high in protein (70 to 100 Gm. daily) is desirable, if the patient to'erates it, in order to compensate for the drain of albumin through the kidneys, and for the low value for serum protein, which probably is a factor in production of the edema. The intake of sodium chloride should be decreased to an absolute minimum and the intake of fluids decreased to from 600 to 800 cc. daily. Diuretics of the caffeine group, those of the acid-producing salt type, and mercurial diuretics frequently accomplish brilliant results in relief of edema. Thyroid extract seems to help in a few cases. Care should be taken to avoid respiratory and other intercurrent infections.

#### AMYLOID NEPHROSIS

The kidney is one of the three organs in which amyloid is most commonly deposited. The most common cause of amyloidosis are chronic infections such as tuberculosis, osteomyelitis, syphilis, actinomycosis, and lymphoblastoma. In other cases the causative factors may be very obscure. In the kidneys, amyloid becomes deposited chiefly in the glomeruli and walls of the blood

vessels. Occasionally it is found around the tubules. In advanced cases, varying degrees of secondary tubular degeneration occur, which resemble very much the atrophy found in other types of nephrosis. Grossly, the kidneys are usually large and pale.

Renal amyloidosis may be found at necropsy in cases in which there was no clinical evidence of renal disease. Cases of amyloid disease are described in which the clinical picture has resembled that of lipoid nephrosis, but more commonly there is albuminuria, slight hematuria, and azotemia, lowering of excretion of phenolsulphonphthalein and, particularly, inability of the kidneys to produce normally concentrated urine, without edema. Casts may or may not be found in the urine; waxy casts are supposed to be pathognomonic. When amyloidosis is suspected, the Congo-red test usually will settle the diagnosis. This test was first described by Bennhold. At the Mayo Clinic the technic has been to give, intravenously, 18 cc. of 1.5 per cent fresh solution of Congo red in triply distilled water, and compare concentration of dve in the blood serum withdrawn one hour later with that of serum withdrawn four minutes after injection of the dye. Any considerable amount of amyloid in the body will cause disappearance of at least 75 per cent of the dve from the blood stream in this period. Little is known of the prognosis and course of amyloid disease, for relatively few cases have bee diagnosed clinically. Since the advent of the use of the Congo-red test, the diagnosis has been made more frequently than before, and data as to prognosis may be forthcoming. The chronic infection or systemic disease is usually of primary importance, and the renal disease is insufficient to explain the patient's death. If renal insufficiency without edema is present, intake of protein should be restricted and intake of fluid increased.

Finally, there are a number of cases of albuminuria without edema, demonstrable renal insufficiency, or evidence of cardiovascular injury, in which classification and prognosis are difficult. In some of these cases the albuminuria is undoubtedly residual from previous glomerulonephritis, or indicates a low grade of inflammatory lesion. The history, and careful studies of renal function are important in this group. Other cases apparently represent a mild degenerative process; hence, they may be classified as a type of chronic nephrosis, and eventually the value for serum proteins may be lowcred, and even edema may appear. Observations at necropsy, in a few cases in which unrelated diseases have caused death of the

patients, have failed to disclose evidence of glomerular inflammatory change.

#### SUMMARY

If the term "nephrosis" is accepted to designate a group of diffuse renal lesions of a mild but definitely retrogressive or degenerative nature, without evidence of exudation, proliferation, or arterial insufficiency, there are four clinical groups which may be placed in this category. Of these, chemical nephrosis and toxic nephrosis are acute lesions characterized by oliguria and azotemia. Chronic lipoid nephrosis is clinically a very different entity, characterized by edema and albuminuria of high grade, without hematuria, cardiovascular changes, or azotemia. Amyloid disease of the kidneys may be diagnosed clinically by the Congo-red test; in this condition clinical symptoms of renal disease may be absent, or there may be mild renal insufficiency and mild hematuria, with or without edema. The treatment of all these conditions is dependent on removal of the cause, in cases in which it is known, and on the disturbed physiology and physiologic chemistry, not on the nature of the renal lesion itself.

#### BIBLIOGRAPHY

1. Bannick, E. G.; and Keith, N. M.: The treatment of nephritis and nephrosis with edema. J. A.

M. A. 91:1944-1952 (Dec. 22) 1928.2. Barker, N. W.; and Snell, A. M.: The Congored test with special reference to excretion of the dye in the urine. Jour. Lab. and Clin. Med. 16:262-270 (Dec.) 1930.

3. Bell, E. T.: A text-book of pathology. Philadelphia, Lea and Febiger, 1930, 627 pp.
4. Bennhold, Hermann: Uber die Ausscheidung intravenos einverleibten Kongorotes bei den verschiedensten Erkrankungen insbesondere bei Amyloidosis. Deutsch. Arch. f. klin. Med. 142:32-46 (March) 1923.

5. Epstein, A. A.: Futher observations on the nature and treatment of chronic nephrosis.

Jour. Med. So. 63:167-186 (Feb.) 1922.

6. Fahr, T.: Pathologische Anatomie des Morbus Brightii: In: Henke, F., and Lubarsch, O.: Handbuch der speziellen Pathologischen Anatomie and Histologie. Berlin, Julius Springer, pt. 1, 6:156-472, 192g.

7. Volhard, F.: Die doppelseitigen hamatogenen Nierenerkrankungen (Bright'sche Krankheit). Berlin

Julius Springer, 1918, 576 pp.

#### CARCINOMA OF THE PROSTATE

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(Read before the Seventeenth Annual Meeting of the Medical and Surgical Association of the Southwest, held at Phoenix, Ariz., Dec. 3-5, 1931.)

A necessary preliminary to the treatment of carcinoma is the proper diagnosis. Since uncomplicated carcinoma of the prostate usually causes no symptoms for a long time, the average case is well advanced when first seen by a physician, and there can be little doubt about the diagnosis. It is incorrect, however, to assume that diagnostic errors do not occur in this disease. They are of two kinds: first, missing a carcinoma; and, second, mistaking another condition for carcinoma. The first mistake is by far the commoner.

In a series of almost two thousand cases of operation for prostatic obstruction, the tissue removed at the operation showed carcinoma in 250 cases. I studied the pathological material and clinical records of these 250 cases, and found that in twenty-five the carcinoma had not been recognized before operation. The reasons for failure to make the diagnosis can be divided into four general groups, as shown in Chart I.\*

Group I. In seven cases the tumor, while a typical prostatic adenocarcinoma microscopically, had so little stroma that it lacked the hardness usually seen. Five of these escaped diagnosis entirely until they came under the microscope. We may say, then, that in this series 2.8 per cent of the carcinomas were soft, and not recognizable by the usual criteria upon rectal examination.

Group II. In five cases the prostates were indurated, but did not have the stony hardness usually found, and the examiners thought of chronic inflammatory changes rather than malignancy.

Group III. In five cases a hard nodule was felt, but its smallness deceived the examiners.

Group IV. In eight cases the carcinoma was obscured by a coexistent benign hypertrophy. In four a small nodule of carcinoma was entirely surrounded by elastic hypertrophied tissue. In one, the tumor grew in a thin layer in the posterior lamella, and was not perceptible, owing to the elasticity imrarted by the mass of hypertrophic tissue beneath. In four, the tumor grew as a hard

Error due to →	I Soft type of tumor.	Error in judg- ing indur- ation.	Small size of nod-	IVa Surr- ounded by B.P.H.	layer over	c Nod ule over B.P.H.	70t 9/
Diagnosed at operation, sus- bected before.	1	2	1	0	0	2	6
Diagnosed at operation, unsus- bected before.	1	0	0	0	,	1	3
Diagnosed by microscope only.	5	3	4	4	0	0	16
	7	5	5	4	1	3	25

\*This table has been published in Young's Practice of Urology, by Hugh H. Young and David M. Davis.

nodule in the posterior lamella, but had a sense of elasticity imparted to it in the same way by the hypertrophied tissue beneath.

It should be noted that this series of undiagnosed cases is 10 per cent of the cancer cases, and about 1 per cent of all the operations for prostatic hypertrophy, and cannot therefore be dismissed as entirely negligible. In nineteen cases, or 7.5 per cent of the cancer cases, there was not even a suspicion of the presence of carcinoma. Sixteen of the cases were not diagnosed, even at the operating table. This demands that frozen sections be made in every case where anything in the least suspicious is found.

As a result of this study, the following suggestions are made in the hope of diminishing the number of missed diagnoses:

1. Extensive induration with adhesions and fixation of the prostate, especially if involving the seminal vesicles, should always cause the examiner to suspect carcinoma, even if the induration is not stony.

2. Nodules markedly finer than the surrounding prostate suggest the possibility of carcinoma. Spheroids of hypertrophy may occur in the posterior lamella, but are so rare that such nodules should suggest carcinoma.

3. Thickening of the membranous urethra, fixation, and the obscuring of its outlines, suggest the inflammatory reaction occurring with carcinoma.

4 The same is true of similar changes in the notch between the two seminal vesicles.

- 5. Thickening and induration of the lymphatics and lymph nodes about the tip of the seminal vesicle suggests the possibility of carcinoma.
- 6. Examination with the finger in the rectum and a metal instrument in the urethra enables one to appreciate better the degree of induration present in the posterior lamella.
- 7. The presence of benign hypertrophy, shown by rectal or cystoscopic examination, in no way excludes carcinoma.

The three diseases most commonly mistaken for carcinoma of the prostate are tuberculosis, chronic prostatitis, and prostatic calculi.

The prostate of tuberculosis may be exactly like that of cancer, as far as rectal examination goes, but other lesions in the cpididymis, bladder, or kidney, are usually apparent. In the rare cases when these are absent, and the patient is of the cancer age, errors may be made. These errors are serious, since operation on a tuberculous prostate is apt to lead to permanent fistula. Careful study of the urine and prostatic secretion can prevent most of them.

The induration of chronic prostatitis distorts the prostate less and is less extreme than that of carcinoma, yet it may cause errors. I have seen two cases in which positive diagnosis of carcinoma was made, and a third in which it would probably have been made had not the patient been a young man in his twenties.

Prostatic calculi should give no trouble unless one forgets to take an x-ray.

Syphilis and actinomycosis might simulate

carcinoma, but are very rare.

I believe that carcinoma of the prostate should always be treated, but the type of treatment to be adopted depends on the stage of the disease. There are only four kinds of treatment; namely: radical operation for complete removal, conservative operation for the relief of obstruction, radium, and x-ray.

Radical removal should be carried out in all cases, with or without symptoms of obstruction, in which the growth is entirely confined to the prostate and in which there is no evidence of metastasis. Unfortunately, one sees very few of these early cases, owing to the insidious course of the disease. For removal the method of Young is to be preferred. This operation is done through the perineum, and in it the entire prostate, prostatic urethra, seminal vesicles, and a portion of the bladder immediately surrounding the vesical orifice, are removed. There is risk that urinary control will not be perfect after the operation, but since there is no other way in which we can even hope for a real cure, one is justified in taking this risk. Coffey suggests that the bladder also be removed, with transplantation of the ureters into the sigmoid. Since early carcinoma so seldom involves the bladder, it would seem inadvisable in most cases to make the operation so much more extensive and dangerous.

If the case is unsuitable for radical operation, radium should be used. My own preference is for the platinum or gold-coated emanation seeds, implanted by needles inserted through the perineum. Occasionally one may implant part of the seeds through an endoscope, as the median and subtrigonal regions can be reached better in this way, or through a perineal incision. With this method, doses as large as desired can be inserted at one sitting without discomfort to the patient and without danger of rectal or urethral irritation or ulceration. Studies at the Memorial Hospital in New York indicate that very large doses can be used in this manner, and that better results are obtained with them. Martin, Quimby, and Pack have evolved a method of calculating the amount of radium necessary for successful treatment of various types of tumors. Since the carcinomatous prostate is often of good size, it is easy, unless one is familiar with this work, to give insufficient doses. Some cases, particularly those with the softer type of growth, show little or no response to radium, but in many others striking symptomatic improvement occurs, and the prostate shows definite softening and reduction in size. In a recent case the patient, who formerly had a nocturnal frequency of seven or eight times, now sleeps through the entire night. In short, the chances of benefit from radium are so great and the danger of untoward effects so slight, that I do not believe it should be withheld from any patient. The two things to avoid are: first, too small doses, which may stimulate the growth; and, second, insertion of a seed or needle too far, so that it passes beyond the seminal vesicle to a point where it may set up a retrovesical infection. This latter event is, fortunately, very rare.

Even if there is well-marked urinary obstruction, one may await the results of radium treatment unless the obstruction is severe enough to cause great misery or to interfere greatly with renal function. this event the nature of the obstruction must be discovered by cystoscopy. If it is of suitable size and location it can be removed by a transurethral procedure such as a punch operation, the electrotome method of Collings, or the cutting-loop method of Stern, as modified by T. M. Davis or Mac-Carthy. If this is not possible, a channel through the prostate can be made by operative removal of the central portion of the growth. This method is greatly preferable to the creation of a permanent suprapubic fistula, which should be reserved for the most debilitated and hopeless cases. The conservative operation can be done by the suprapubic approach, but the perineal method is much more satisfactory. If the prostate is large and entirely infiltrated with a scirrhous type of growth, this procedure may be extremely difficult by either route. I have experimented with the electric scalpel special types of cutting instruments, and hope soon to be able to suggest a method for meeting the requirements of this situation in a manner which will reduce trauma to a minimum and at the same time be entirely

I have never seen any important reason for not placing radium emanation seeds in the remaining portions of the prostate and seminal vesicles after conservative operation on the carcinomatous prostate. Healing does not appear to be delayed, and certainly the seeds can be placed more accurately at this time than at any other.

X-ray appears to have little effect on the prostate itself in carcinoma. Deep therapy, however, is strikingly effective in relieving the pain due to metastasis, particularly the common lumbago and sciatica, and is a real godsend in this respect. X-ray applied directly to the prostate, in combination with radium treatment, may have some synergistic effect. There is little real evidence to support this idea, but it may be tried in a situation where neither doctor nor patient wishes to leave any stone unturned which may offer even a remote chance of benefit.

In far-advanced cases with invasion of the bladder, rectal ulceration, or rectal obstruction, the treatment must be purely palliative. Extension to the bladder may demand suprapubic cystostomy. In such cases urethral involvement may usually be relied upon to bring merciful termination, and nephrostomy or ureterostomy is seldom justified. For rectal irritation, suppositories or nupercaine, or even cocaine, are very useful. Rectal obstruction and intense pain resulting therefrom may necessitate colostomy. When pain alone is the dominant factor, cordotomy is the logical procedure and should be done if it appears that the patient will survive more than two or three months.

The patient with carcinoma of the prostate is sometimes abandoned to his fate, and this, I think, is unjustifiable. It is the duty of the physician to relieve as well as to cure, and I have tried to show that he has many effective methods at his command in this disease.

## GENERAL CONSIDERATION IN THE HANDLING OF FRACTURES, TAKING A FRACTURE OF THE FEMUR AS AN EXAMPLE

W. S. SHARP, M. D. McNary, Arizona

(Read before the Seventeenth Annual Meeting of the Medical and Surgical Association of the Southwest, held at Phoenix, Ariz., Dec. 3 to5, 1932)

I am speaking from the standpoint of the industrial surgeon, upon whose shoulders fractures weigh most heavily. I am speaking too, from the standpoint of one whose cases occur in the most unfavorable surroundings. The patient will be a man who probably has not had a bath in weeks, whose clothing is not changed or washed often, who is usually covered with grease, grime, dust and everything most unfavorable to a lacerated wound of any degree, to say nothing of a protruding fragment of bone that has been drawn back into the interior of a limb. These

are quite different from the fractures seen in clean individuals and that occur in better surroundings.

In the city where an accident occurs a warm comfortable ambulance is present within a very few minutes. With the corporation whom I am serving, our most serious accidents occur at the outposts, from fallen trees, fallen logs and timber, wrecked trains, and so forth, sometimes ten or fifteen miles from the hospital, with deep snows in winter, and heavy rains in summer, often preventing other transportation than by log train. I am not familiar with the situation in the gold, silver and copper mining centers, but am confident that you have your problems along similar lines.

Within the last few years greater interest has been shown by the profession everywhere in the treatment of fractures, in the fracture equipment of hospitals, and in the qualifications of the men doing fracture This has been brought about to a great extent by recognition of the inadequate treatment of fractures and uncertain results obtained. Also by the activity of the American College of Surgeons whose committee, headed by Dr. Charles L. Scudder, has set about to standardize as nearly as possible the treatment of fractures, to improve hospital facilities, and to impress upon the surgeons the inadequacy of old and indirect methods of traction. This committee, which has laid down rules for the adequate equipment of hospitals, has also submitted requirements for surgeons doing this work, which I will enumerate.

- (1) The procedure must be with the highest degree of safety to the patient.
- (2) Surgeons and assistants should be skilled in this treatment.
- (3) They should have proper instruments and appliances for their work.
  - (4) The anesthetist should be skillful.
- (5) Pre-operative, operative and postoperative treatment should be adequate.
- (6) Method chosen should be the one indicated in the particular case.
- (7) Contiguous joints should be moved as little as possible.
- (8) The surgeon is held responsible for only the average in his community. He feels more should be given.

#### GENERAL CONSIDERATION IN ALL FRACTURES

- (a) Avoid unnecessary handling or moving.
  - (b) Keep the injured man warm.
- (c) Leave the limb or strap the member in the position it is found.

- (d) In compound fractures, the clothing should be cut away, and if possible gauze or some clean dressing should be placed over open wounds or bone ends.
  - (e) Ease the man's pain.

At the plant where I am employed, each locomotive, steam loader, steel gang car, and major operating unit, such as sawmill, planer, machine shop, or power house, is supplied with a long box containing the following:

A two-man stretcher; two blankets; roll of heavy canvas six feet by ten feet; a small package containing sterile gauze, some bandages, and a smaller box containing two quarter-grain morphine tablets.

The foreman at monthly meetings are given first aid instructions. They are instructed to lay the stretcher down, and on top of that, the canvas and blanket. The injured man is placed on this, and the injured limb is strapped or bound by the bandages to the well limb, if such exists. The canvas is then folded and bound around the entire body and limbs. The canvas serves as a protection from rain or cold, and the man thus bound may be picked up bodily; he is thus transported directly to the x-ray room, and treatment then decided upon. If he is in a state of shock, this is combatted. All clothing is cut away. No attempt is made to remove clothing intact. It is a routine measure to administer by hypodermic the prophylactic dose of tetanus antitoxin. He is given ease from pain, and kept as warm as possible. The fracture is reduced as early as safety to the patient and circumstances will permit. At all times gentleness in handling and a minimum of handling is insisted upon.

We are indebted to Dr. Scudder's committee, from the American College of Surgeons, for the following recommendations as to the equipment of hospitals: The hospital should be well supplied with adequate and approved fracture appliances, especially sheet wadding and rolls and sheets, plaster of Paris, various metallic splints and their modification, overhead frame or "grape arbors" for overhead suspension; screw-pullers may be placed in the frame anywhere, small strong rope, weights and a fracture bed, a Hawley table and an x-ray plant. In addition to this, for open reduction of fractures, metal plates of various lengths, metal bands, wire, kangaroo tendon, bone-holding forceps, and so forth, should be at hand. Also material for skeletal traction.

So many hospitals have neglected these details and, as a result, fractures have been difficult to handle and their proper reduction delayed.

Fractures of the neck of the femur are seen most frequently in the aged, and require the services of one who gives special attention to this work. Fractures of the upper third of the shaft are important because of the difficulty of reduction and the frequent deformity that follows. Fractures in the middle third of the shaft may occur in various forms, such as oblique, with marked overriding, or transverse. The chief characteristic from the standpoint of end result is the marked shortening that may result from an unreduced fracture. In addition to the marked shortening, angulation deformity is not uncommon. Fractures of the lower third of the femur are important because of the frequency with which they involve the knee joint and its associated structure, resulting in shortening and such deformities as knock knee, restricted motion, instability, effusion and pain. Displacement of fragments in fracture of shaft of the femur is far greater than in fracture of any other bone on account of the length of the femur, and the powerful muscles attached. In transverse or even slightly oblique fractures, where separation is complete, the fragments override at once, and in very oblique fracture, the sharp point of the upper fragment may penetrate the muscles and appear at the skin surface, although indirect violence may be the cause.

Usually the distal fragment is drawn upward and behind the proximal one, on account of the muscular contraction and infiltration of the thigh, and an angularity directed outward and forward occurs. The lower fragment rotates outward, turned by the weight of the foot and leg, and rarely turns inward.

In upper third fractures the proximal fragment is, as a rule, pulled forward and outward by the muscles attached to the trochanters, the gluteal muscles and the psoas muscles. while the flexors and adductors draw the lower fragment inward and up against the upper fragment.

If the periosteum remains intact in one part of a fracture, holding the fragment ends together, the shortening results from the angularity of the fragments, but if the periosteum is stripped off either fragment sufficient to allow a slipping by, or is torn completely, shortening in addition to angularity is caused by the overriding. Some rotation is present in all cases.

The most serious complication in any fracture is fat embolism. This complication is more liable to occur in fracture of the shaft of the femur, or that portion of the femur

from the lesser trochanter to the condyles; first, because of the unusual displacement of the fragments brought about by the divergent pull of the muscles upon the upper and lower fragments; second, because of the proximity of the larger vessels; assuming that the theory of absorption of the medullary substance of the bone by the return flow of blood to be correct, and I have heard of no more plausible theory. The two cases of this complication occurring in my practice have both been fatal, and in both instances the break has occurred in the middle and upper thirds of the bone. Fractures of the upper and lower thirds of the femur, which are likely to resist forcible traction and reposition, should be replaced by operation. Certain transverse fractures whose fragments can not be approximated because of muscle interposition should be operated upon. Transverse fractures having interposing fragments of bone should be operated upon. Long oblique and oblique fractures that defy traction should be openly reduced.

The limitations of traction and countertraction, of manipulation and pressure, together with suspension, as the adequate treatment of fractures of the shaft of the femur are gradually being recognized. As these limitations are better known, much unnecessary experimental manipulative treatment will be abandoned.

The successful and adequate method of treating a given fracture should be selected at the outset. There will always be fractures offering varying difficult problems in their management. There will always be variations from normal anatomical and functional results in any non-operative or operative treatment. These facts make it incumbent on the operator to give each case special study.

In fractures of the femur where adequate fixation, such as a Lane plate, has been used, such authorities as Scudder and Sherman do not use the plaster cast, but employ the Thomas splint with overhead suspension. Circumstances will alter this routine. For instance, fracture of the upper third of the femur, where there is comminution and difficulty in attaching a Lane plate to the fragments, a spica cast would be preferable.

In fractures of the femur, more than anywhere else in the body, we have diverging muscular pull on the upper and lower fragments to deal with. In these cases, and especially where there is much overriding or separation, or comminution in the fragments and where there is doubt as to the interposing of muscle and bone fragments, open

reduction should be resorted to as early as possible. The longer this procedure is delayed, the greater the difficulty from contraction of muscle and fascia, thus requiring additional manipulation and handling and affording a greater opportunity of contamination with its disastrous results.

In open reduction, especially where there is damage to the surrounding soft parts, and where debridgement and manipulation are necessary, I think a rubber tissue drain for forty-eight hours is a distinct advantage. I know this will not meet with the approval of several present, but experience has proved it to be a wonderful safety valve.

#### PROGNOSIS IN FRACTURES OF SHAFT OF THE FEMUR

The prognosis in fractures of the shaft is of interest in three main directions; mortality, functional results, and cosmetic results. First to be considered is danger to life, which is most important, and is a serious question in open fractures especially. The fractures of the shaft are accompanied by much violence, shock and hemorrhage, and this factor takes first place in the prognosis. Next to be considered are good functional results. End to end or anatomical approximations are not absolutely necessary for the attainment of good functional results, but to-day that is not so accepted with the benefits of skeletal traction so easily obtained. Finally, satisfactory cosmetic results must be considered: that is, good end to end reposition of the fragments without deviation of the angle of support.

This is the ideal result to be sought. Normal length is maintained and the patient does not have to learn new balance and habits or new muscular tricks to get about. The proper use of skeletal traction will avoid shortening and any deviation from the normal lines of weight bearing. At the plant where I am employed, a complete physical examination is required before an applicant is employed. Hardly a week passes that we do not see the bad results of the old indirect extension methods, such as shortening, angulation, ankylosis, and so forth.

#### SUMMARY

Handle with the idea of minimizing shock. Relieve pain and keep the injured man warm. Support the limb in the position it is found. Transport with a minimum of handling. Depend upon your x-ray findings. Decide upon your treatment and if patient's condition is favorable, avoid unnecessary delay.

## THE CHANGING POLLEN PICTURE E. W. PHILLIPS, M. D., F. A. C. P. Phoenix, Arizona

(Read before Maricopa County Medical Society at Phoenix, Arizona, Jan. 25, 1932.)

Last spring an indignant botanist walked into the office bearing an armful of pollinating plants. The botanist was Jesse Knapp of North Hollywood, and his indignation arose from the fact that none of these potential hay-fever producers has been reported from Arizona. Most of his specimens had been gathered on the desert between Wickenburg and Marinette, and their occurrence there interests the scientist more than the clinician. If the few hardy souls who inhabit that region suffer from hay-fever they do not trouble physicians about it. But two of the plants came from the Salt River Valley close to Phoenix, and the sight of them provoked certain twinges of conscience, and led to an examination of specimens and records. Both plants were desert ragweeds: Franseria dumosa, the common name of which is supposed to be bush sandbur; and Franseria ambrosioides, the canyon ragweed.

Knapp's specimen of Franseria dumosa had been collected near the packing plant, and a limited quantity of it was found there growing alongside the common Franseria deltoides. This distribution continues along the Salt River banks as far east as I have had time to go; it is found also in irregular patches along the Gila, and a narrow zone of it runs across the base of the Salt River mountains. Among my pollens I found a specimen of dumosa pollen collected in 1923. The files yielded up an old letter from Mr. Robert Peebles, the Government botanist at Sacaton, in which he enclosed a specimen of its staminate flowers, described the plant and wondered whether it might not be causing hay-fever among his neighbors. His question seemed to be answered in the negative. At that time I was treating several patients from Sacaton, and found it easy to control their Franseria symptoms by administering an extract of the pollen of rabbit bush. So, that hay-fever plant had been neglected.

The other specimen was an old friend, Franseria ambrosioides, the canyon ragweed. It has a wide but thin distribution all over Central Arizona—thin, because the plant requires a fair supply of water. It cannot live on the open desert but must keep to the canyons and washes. In wet seasons it grows rank and pollinates profusely. In the spring of 1924, having used up my small supply of rabbit bush pollen, I substituted canyon ragweed pollen in the treatment of patients

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who were having hay-fever from the rabbit bush, and it worked quite as well. It seemed to be of little importance, because, in quantity it is insignificant compared to the rabbit bush. But that was in the cycle of dry years. If the tree-ring record of Dr. Douglas holds true, we shall have several more wet years,



Fig. 1. View of so-called "sage-brush" on the desert, this being rabbit bush (Franseria deltoides), a closeup of which is shown in Fig. 2.

and in that event the canyon ragweed will greatly increase. It may be as well at this point to present a brief description of the three spring-pollinating desert Franserias, which might be called

#### THE DESERT RAGWEEDS

The commonest, the hardiest, and by far the most abundant, is Franseria deltoides,



Fig. 2. A close-up view of rabbit bush, (Franseria deltoides), incorrectly called "sage-brush."

the rabbit bush. Locally, and quite incorrectly, it is called sage brush (Fig. 1). It is a low sprawling bush (Fig. 2) with triangular gray-green leaves that have a sage-like smell. It is strictly an opportunist and it takes advantage of the spring rain, if there is any,

to bloom inconspicuously at any time from the tenth of March to the first of May. Given a little moisture, it can release a great quantity of pollen, though the yield from each bush is small.

Next in order is the bush sandbur, Franseria dumosa (Fig. 3), so called from its fruit; though the fruit of the rabbit bush is also a bur. Dumosa, as has been said, has a spotty distribution in this region. It has a denser growth than the rabbit bush, its leaf is smaller and it pollinates profusely at the same season.



Fig. 3. A close-up view of the bush sandbur (Franseria dumosa).

The canyon ragweed, Franseria ambrosioides, has been described in part, (Fig. 4). It is taller than either of its congeners, distinctly a greener and livelier plant. It blooms a week or ten days later than the others and yields considerable pollen. It seems to be extending its range, and can be found along canal banks and in fence corners at the outer border of the irrigated valley.



Fig. 4. The canyon ragweed (Franseria ambrosioides), showing its more luxuriant development, as it grows only where there is plenty of moisture.

As related above, I had used canyon ragweed pollen. I lost no time in trying out that of the bush sandbar. I had at the time (April 1931) some thirty-three patients under treatment with rabbit bush pollen, and I tested all of them with an extract of dumosa pollen. In twenty-eight cases, the two pollens produced equal, or nearly equal, reactions by the intradermal method, with rabbit bush having a shade the advantage. In five cases, there was a pronounced difference in favor of the sandbur, and these cases are worth a brief description. was a man, an old pollen asthmatic, who lived near Tempe and who was sensitive to everything in the ragweed group. He had first come under treatment in 1927, receiving in that year intensive treatment with rabbit bush pollen. His relief extended over the next season, but he returned in 1929 and 1930, obtaining only partial relief. He was not doing any better in 1931; in spite of full dosage he had an occasional sharp recurrence of his symptoms. The test dose of bush sandbur pollen excited a strong local reaction, and he had no further trouble. treatment was, of course, continued through the season. The second patient was a woman, living near Tempe; her case resembled the first, and her response was equally satisfactory. The third was a railroad man on the Parker run, and his symptoms were worst at that end. He was relieved by the sandbur but not by the rabbit bush pollen, though on each trip he traversed a desert covered with rabbit bush. There must be considerable Franseria dumosa near the Colorado River. The other two patients were physicians; they were multiply sensitized, they live in Phoenix and they knew that a new pollen was being Both reported better results when dumosa pollen was included in their dosage.

Of the other twenty-eight patients who reacted to the two Franserias alike or nearly so, nineteen were treated with rabbit bush rollen only, and in nine cases the sandbur was alternated with rabbit bush. It made no difference; the tolerance was the same, and all twenty-eight got good results. Apparently the biologic relation of the spring franserias is very close; all three are present in the air at the same time and group sensitization is the rule, specific sensitization the exception. A combination of the franseria pollens in the proportion of, say, seven parts of deltoides, two parts of dumosa and one of ambrosioides would approximate the distribution and it would probably take care of the occasional minority reactor. I shall try it next spring and report the result.

RUSSIAN THISTLE Five years ago I ventured to make this prediction': "I have watched the Bermuda grass creeping up along the watercourses to higher and cooler climatic zones, until now it is well established at 3500 feet and is beginning to take hold in some places at an altitude of 5000 feet or higher. The Russian thistle, traveling after the manner of tumbleweeds along roads and rights of way, has been adapting itself to lower and hotter zones until now there are small patches of it scattered all over the Valley. Growing population, greater acreage in use, more irrigation, more travel, more shipments of weed-fouled fodder, are the factors that are combining to erase our natural botanical boundaries. So it is probable that within a few years we shall have to deal with a more complex hayfever situation in Arizona and we need to be alert to deal with changes as they appear."

Disconcertingly, nothing happened. seasons were hot and dry; the Russian thistle barely held its own. Then man came to the aid of nature. There was a large area of recently reclaimed land, light soil and rather salty, in the district beyond Chandler. This land was largely planted to cotton. When the pink bollworm was discovered there, a non-cotton zone was established; the bollworm was evicted and a much worse pest replaced it. The Russian thistle established itself in the fallow fields and throve amazingly; it took whole quarter-sections. At the same time it had been penetrating the Valley from the north, traveling by roadsides, lodging in fence rows. Then came a favoring season and a new sort of hav-fever.

In the week that included May 1, 1931, I had 104 patients under treatment with Bermuda grass. Most of them, having begun treatment at the onset of symptoms about the first of April, were at this time quite comfortable on two or three intradermal doses a week. And then something went wrong with a third of them. Instead of the continued and increasing relief which experience had taught them to expect, thirtythree patients reported a recrudescence of their hay-fever. This did not happen all at once, but the relapses appeared a few at a time during the first two weeks of May. Also the distress of which these people complained was not constant; they might be comfortable for several days, and then have a bad day and a worse night. There was nothing in the state of the Bermuda grass, at that time declining from the peak of its pollen output, to explain their symptoms. At the same time a number of patients who had in previous years been treated for Bermuda sensitization but who so far this year had not felt the need of any treatment, sought relief from lively hay-fever symptoms.

A drive over the Valley, to see what was growing, supplied the answer. The amaranth, which seldom troubles anyone before June and which does most of its pollinating in late summer, was a month ahead of schedule. But that was not all; the Russian thistle had finally adapted itself to soil and climate and had spread widely. It was coming into bloom. All the patients who had suffered relapse were tested intradermally with amaranth and Russian thistle; all reacted positively to one or to both. So did the old Bermuda patients, now coming in for the first time this year. In addition to these, there was one patient whose only positive reaction was to amaranth, and another whose only pollen sensitization was to Russian thistle. noted in an earlier article there is a tendency to group reaction among local members of the Chenopodiales. Lamson<sup>3</sup>, in a study of 300 patients, recently offered evidence of this bio'ogic relationship. Of the thirtythree relapsing patients, fifteen reacted alike to amaranth and Russian thistle; eleven showed the stronger response to amaranth and seven others a reaction favoring Russian thistle. The reactions were used as a guide to treatment, one or both pollens being added to the Bermuda doses as indicated by the tests. Thirty-two of the relapsing patients were relieved, in six cases by the first dose, which was the intradermal test. One patient was not promptly relieved and refused further treatment.



Fig. 5. A mass of Russian thistle or tumbleweed; the characteristics of the individual plants are not well shown.

If the agriculturists of this district knew now what they will learn later, they would by a brief concerted effort exterminate the Russian thistle. It could have been done easily any time in the past five years; it can still be done, but not so easily. Instead they will probably let the pest get beyond control and then petition for government relief. Therefore a brief description of the plant is in order. The Russian thistle (Fig. 5), Salsola kali, is not a thistle at all; it is a tumbleweed. It prefers an alkaline soil but will grow anywhere, and it may vary from the size of a blade of grass to a massive plant bigger than a wash tub. The plant has no leaves, their place being taken by spiny bracts. It is at first vividly green and succulent; as it grows, the stems become firmer. The rudimentary blossoms, consisting only of the reproductive parts, appear at the base of each spine, and new ones come out as the plant grows. The whole plant, including the pollen, contains an irritating substance allied to histamin, and the spines cause hives when they puncture the skin. The mature plant takes on a purplish color. In the fall it turns brown, breaks off its tap root and rolls with the wind, scattering seeds as it rolls. The hay-fever caused by Russian thistle is particularly severe and difficult to treat. the plant covers the Salt River Valley, an unpleasant experience is in store for the allergic portion of our population.

CARELESS WEED AS A COVER CROP For several years those who treat pollen disease have been puzzled by the persistence of hav-fever among a certain group of patients long after frost; in fact, it continued until the middle of December. The cause, when found, was absurdly simple.

Citrus fruit is grown in the relatively frost-free belt at the edges of the irrigated valley. Orchardists keep their groves cleanly cultivated during the summer, and they used to keep them clean the year round. Of late years, however, many of them do their



Fig. 6. Careless weed, two plants of which are growing besides a tumbleweed (Russian thistle).

last cultivating in early fall. Careless weed comes up thickly, but it grows only about a foot high. These small plants pollinate in November and in December until a killing frost. This does not interest the citrus grower, who ploughs under this cover crop of weeds to serve as humus. More and more, people of moderate means are leaving the city and building homes near the edge of the valley, or in the adjacent desert. This group furnishes the cases of late fall and early winter hay-fever, and these cases are all caused by amaranth.

#### MISCELLANEOUS POLLENS

A fairly frequent cause of incomplete success in the treatment of hay-fever is found in the pollen of the olive tree. In certain parts of the valley this tree has been used extensively for ornament. There are a few groves operated commercially. In April of 1931 I found it necessary to administer olive pollen as an adjuvant to other pollen therapy in eleven cases. There was one patient who had hay-fever from olive pollen alone, and this came from a solitary olive tree near her sleeping porch. All these patients were promptly relieved by the appropriate pollen therapy.

In 1922 I reported a number of cases of late summer hay-fever from the so-called "six weeks grasses", the wild grasses that lie dormant during most of the year and spring up after the summer rains. For some years thereafter there was no more trouble of that sort, for the range was over-grazed and the summers were dry. In 1931, after two wet summers, this six-weeks-grass hayfever again appeared. The native grasses were augmented this time by the patches of Bermuda grass that are now to be seen in the hill country, even at elevations above 5000 feet. Lacking the specific pollens, 1 treated them with Bermuda, usually with complete success.

This outlines the changes in our local pollen picture up to date. There is no reason to suppose that it is final. Our soil is hospitable to strange plants as well as to new people and further invasions are to be expected. That is only one more reason why every doctor who treats pollen disease should educate himself to know the plants that cause it, what they are, where they grow and when they pollinate. The time and effort so spent will be well repaid by his satisfaction in treating more successfully an ailment which has become a menace to the public comfort, if not indeed to the public.

#### REFERENCES

1. Phillips, E. W. Ragweed hay fever in the Salt River Valley. Southwestern Medicine, 12:2, February, 1928.

2. Ibid. Hay fever in Central Arizona. Southwestern Mcdicine, 7:273, August, 1923.
3. Lamson, R. W. Evidence of biologic relationships among species of Chenopodiales. Proc. Soc. Exper. Biol. and Med. 28:502, 1931.

#### AGRANULOCYTIC ANGINA

#### CALVIN A. EATON, M. D. Yuma, Arizona

(Read before the Fortieth Annual Meeting of the Arizona State Medical Association, held at Nogales, May 6-8, 1931.)

Synonyms: Agranulocytosis; malignant

leukopenia.

Agranulocytic angina is an acute systemic disease, etiological factors unknown, characterized anatomically by marked leukopenia with absence of granular leukocytes, ulcerative and necrotic areas usually involving Waldeyer's ring, associated mucous membranes, and genitalia. Clinical manifestations are of hyperpyrexia, progressively lowered resistance and, usually, an early termination which is fatal.

HISTORY

The disease was first introduced by Warner Schultz in 1922. He presented five cases, describing them in detail and calling the disease agranulocytosis. The Medical World recognized this series of clinical entities as a new disease. Various case histories have been reported since the middle of the nineteenth century which we know now were typical agranulocytic anginas, because of their characteristic necrotic ulcerations of the pharyngeal membranes and other associated pathology. Since 1922, increasing numbers of cases of this disease have been described in most every country. Many of these cases do not appear to be the typical anginas as described by Schultz.

CASE REPORT

Previous History: Mrs. S., aged 38, housewife, was seen January 6, 1928, complaining of head cold with a profuse greenish purulent discharge from the nose. With argyrol nasal tampons, the condition cleared up in 7 or 8 days. Patient was not seen again until February 16, 1929, then complaining of the symptoms previously mentioned. The same treatment was instituted for about ten days and patient improved and did not return until September 16, 1929, at which time she complained of having several severe attacks of colicky pain in the upper right quadrant, with referred pain to right sub-scapular region. Condition was diagnosed as an acute exacerbation of a chronic cholecystitis. Her condition gradually improved under treatment but patient complained of general malaise and weakness for some time.

The blood count one month after attack showed white blood cell count of 8,400; red blood cells, 4,120,-500. The patient was not seen again until June 26, 1930, at 4:30, at which time she complained of sore throat, duration two days, pain on deglutition, a duration of one day. There was general malaise, nausea, headache, small ulceration on right thigh about size of a dollar, also small ulceration on right labium majus, and pain in the right ear. Physical examination revealed slight jaundice, small ulcerated areas about one centimeter in diameter on tonsils, pharyngeal wall, and uvula, with marked edema of uvula. There was a small indurated area, rough and hyperemic, at site of first right lower molar, due to its extraction two months previous. An ulcerated area was found on the right thigh, approximately 3 cm. in diameter, with a red areola about 15 cm. in diameter and slight induration surrounding the ulcerated area. A similar ulcerated area, only smaller, was found on the right labium majus.

Treatment consisted of antiseptic dressings applied to the skin surfaces; painted areas in throat with one-half strength iodine. Mouth wash of Fowl-cr's solution, glycerine, peroxide and wine of ipecac every 2 hours, alternating with a gargle containing tincture of guaiac. Rest and quiet was recommended.

On the following morning, patient did not seem to be reacting to treatment but was becoming progressively worse, so was placed in Yuma General Hospital. Major import of laboratory reports revealed the following: Urinalysis negative except for one plus albumin. Red blood count, 3,520,000; hemoglobin, 45 per cent; some poikilocytosis. White blood count, 2,850, with 94 per cent small lymphocytes, 1 per cent large lymphocytes, 1 per cent transitional, and only 3 per cent polymorphonuclears. Myeloblasts, 1 to every 100 white blood cells counted. No mononuclears, eosinophiles or basophiles. Serum reaction Wassermann, negative. Cultures: Throat and wound showed staphylococci present. No growth on blood culture.

Progressive Clinical Record: On admission, 11 a.m., June 27, 1930, temperature was 103, pulse, 116; respirations 24. General condition became progressively worse throughout the day. The ulcerated areas in the throat had become more organized, with a profuse exudate. There was intense pain over entire abdomen, with absolutely no rigidity. Previous medication was continued and, in addition, 2000 cc. of Ringer's solution was given intravenously. On following morning, January 28, temperature, pulse, and respiration were about the same. However, the patient complained of more pain over entire body, especially at right hip ulceration and right hypochondriac region. Patient was becoming more toxic and more critical. Additional medication consist d of 10 cc. of sterile milk given intramuscularly. In the afternoon, temperature rose to 105; pulse, 128; respirations, 24. There was photophobia; sclera had an icteric tinge; and there was conjunctivitis, with a greenish purulent discharge. The throat area became very necrotic and sputum was a heavy mucus streaked with green. Blood count showed white blood cells, 2,500. Red blood count, same. On morning of June 29th, patient became very restless, pulse poor quality and irregular. Patient was given opiate and slept for short intervals. General condition was very grave.

White blood cell count was 2,100, a differential count showing no polymorphonuclears. Six-tenths gram of neoarsphenamine was administered.

Four doctors were called in consultation and the consensus of opinion was that the patient was in such a grave condition that only symptomatic treatment was advecated. However, 2,500 units streptococcus antitoxin were administered, and the usual 2,000 cc. of Ringer's solution and glucose was given intravenously.

June 30, lower extremity cyanotic. Patient unable to swallow and irrational at times. Pulse, weak and irregular. White blood count, 1,900; polymorphonuclears absent; all cells lymphocytes. Forty cc. of 1 per continuous mercurochrome was given intravenously, together with 1000 cc. Ringer's solution. General condition and pulse were somewhat improved for a short interval. That night slight

rigidity of right leg and left arm became noticeable

Morning of July 1, white blood count was 600 cells, all lymphocytes and no polys. Subcutaneous injection of 1000 cc. normal salt solution given. Throughout the day patient was drowsy, unable to swallow; left hand twitched occasionally; pulse was irregular, breathing shallow.

In the afternoon of July 1, the white blood count had receded to 200 cells; only small lymphocytes were found. General condition remained the same until 3:45 a. m., July 2, at which time patient died.

Autopsy was not permitted.

This case, I believe, represents one of the true agranulocytosis cases as originally described by Schultz, in 1922. As I have searched through the literature of the 270 cases reported, I found about 84 with the typical text-book description, as given by Schultz. The typical cases are usually found in middle aged women; with previous history of gallbladder troubles; a sudden onset with high fever and general malaise. Ulcerations, necroses, diphtheritic or gangrenous processes especially of the tonsils, pillars of the fauces, uvula, palate, and pharynx; and occasionally similar lesions of the gums, tongue, larynx and genitals. There is in some cases the presence of icterus. Occasional enlargement of the liver and spleen. The characteristic blood picture: A profound depression of the white blood cell count, usually less than 1000, with a disappearance of the polymorphonuclear neutrophils. There is a relative lymphocytosis. The red blood cells and blood platelets are not disturbed. The disease has a rapid fatal course.

#### ETIOLOGY

A great deal of work has been done to determine the etiology of the disease. In the typical cases reported, about 79 per cent have complained of gallbladder disease together with repeated attacks of tonsillitis and usually associated dental caries or apical abscesses. Several of the acute cases followed, three to five weeks, after the removal of teeth. Many believe that it is of a bacterial origin: Bacillus pyocyaneus, streptococcus, and staphylococcus are the chief organisms believed to be involved.

PATHOLOGY

The ulcerations may be deep and necrotic or superficial and cloudy, resembling a diphtheritic membrane. A marked change is noticed in the bone marrow, it being yellow and fatty, showing no cellular reaction whatever. There is a death of the granulocytes. There is cloudy swelling and parenchymatous degeneration of the liver, kidney, and spleen.

SYMPTOMATOLOGY

There is a sudden acute onset, high fever maintained throughout the disease. The patient complains of a sore throat and dysphagia which becomes progressively worse. The ulcerative areas of the mouth and pharynx spread rapidly and may involve all of the oral and buccal mucous membrane. Some of the cases may develop jaun-The characteristic and diagnostic findings are in the typical blood findings. A marked leukopenia is found from the first, increasing from day to day until the leukocytes are practically all absent through the course of the disease. The differential count shows a very marked decrease in the polymorphonuclears until the final stages, when they are entirely absent. There is no marked decrease in the number of red blood cells throughout the disease.

The duration of the disease is very short, usually five to eight days.

The diagnosis is fairly easily established if routine blood counts are made on cases which have ulcerative necrotic areas of the mouth and pharynx and the accompanying classical symptoms, as given previously.

The differential diagnosis should include: Vincent's angina, diphtheria, arsphenamine poisoning, radium and x-ray reactions, leukemias, anemias, septicemias, typhoid fever, tuberculosis of the throat, and other closely associated diseases.

#### PROGNOSIS

The prognosis is very poor. Ninety-five per cent of the cases are fatal when the white blood cell count falls below 1000.

#### TREATMENT

Specific treatment is unknown. X-ray and radium therapy, leukocytic extract, blood transfusion, and intravenous medication have given results where there is not a complete absence of polymorphonuclears.

#### CONCLUSION

This disease, which is relatively rare, should be diagnosed early, and a careful study of the etiology and treatment are most important.

#### BIBLIOGRAPHY

- 1. Hueber, Walther: No. 83824, Contribution to the problem of agranulocytoses München. med. Wchnschr., 76: 881-882, (May 24) 1929.
- 2. Paroulek, Jan: No. 83419, Agranulomyelo-blastic septicemia cured by repeated transfusions of blocd, Arch. d. mal. du coeur, 20: 648-664, 1927.
- 3. Zadek, I.: No. 43791. The problem of agranulocytosis, Med. Klin., 21:688-690 (May 8) 1925.
- 4. Lauter: No. 43790. The question of cases of septic angina accompanied by agranulocytosis. Med. Klin., 20:1324-1326. (September) 1924.
- Elkesles, Arthur: No. 43789. Contribution to the disease picture of angina agranulocytotica, Med. Klin. 20:1614-1616 (November 16) 1924.
- Bantz, Rudolph: No. 43788. A condition resembling leukemia, with a blood picture similar to an extreme leukopenia. Med. Klin., 19:1705-1707, (December 27) 1923.

- 7. Bakker, R., and Kuyer, A.: No. 101444, Agranulocytosis, Genessk. Tijdschr. v. Nederl.-Indie, 69: 542-547, 1929.
- 8. Fumagalli, C. R.: No. 101516. Contribution to the knowledge of so-called agranulocytosis; Penslero Medico, 16:149-156 (March 20) 1927.
- 9. Venckunas, J.: No. 101598. Agranulocytosis, Medicina 11:169-179, 1930.
- 10. G-schelin, A.: No. 101599. Agranulocytic angina. Acta Oto-Jaryng. 12: 385-394, 1928.

  11. Fieschi, A.: No. 101517. Agranulocytosis, Riforma Med. 46: 611-612 (April 21) 1930.
- 12. Chevallier, P.: No. 101514. Werner Schultz disease (Agranulocytosis W. Schultz, 1922). Sang. 3:317-332, 1929.
- 13. Reznikoff, Paul.: No. 100961, Nucleotide therapy in agranulocytosis, J. Clin. Invesitgation, 9:381-391 (December 20) 1930.
- 14. Felderman, Leon: No. 99206. Is agranulocytic angina a terminal stage of Vincent's angina? Eye, Ear, Nose and Throat Monthly, 9:10-11 (February) 1930.
- Bigler, John A.; and Brennemann, Joseph: No. 97801, Sepsis with leukopenia agranulocytosis in chi'dren, Am. J. Dis. Child., 40:515-532 (September) 1930.
- 16. Rosenthal, Nathan: No. 97800. Observations on agranulocytosis, Laryngoscope, 40:592-597 (August) 1930.
- 17. Hedges, Churchill F.: No. 97627, Agranulocytosis, W. Virginia M. J., 26: 532-537 (September) 1930.
- 18. Gordon, William Henry: No. 92208, Agranulecytosis, Ann. Int. Med. 3:1008-1023 (April) 1930.
- 19. Blumer, George: No. 827207. The agranulocytic blood picture in conditions other than angina, Am. J. M. Sc., 179:11-16 (January) 1930.
- 20. Blanton, Wyndham, B.: No. 86757. locytosis with recovery, J. A. M. A. 92: 2099 (June 22) 1929.
- 21. Sharp, E. A.: No. 86731. Agranulocytic angina, U. S. Nav. M. Bull., 27:112-115, (January) 1929.
- 22. Feer, Waldemar: No. 46480. The question of agranulocytosis, Schweiz-med. Wchnschr., 56: 551-555 (Juna 5) 1926.
- 23. Hirdt, C.: No. 53459. Experiences in an epidemic of malignant angina, Ugesk. Laeger, 89: 186-188 (March 10) 1927.
- 24. Roch, M.; and Mozer, J.: No. 53549.. Angina agranulocytotica. Presse Med., 34: 1171-1172 (September 15) 1926.
- Bautz, Rudolf: The question of agranulocytosis, München. med. Wehnschr. 72: 1200-1201, (July 17) 1925.
- 26. Hahan: No. 57205. Fatal monocytic angina, Deutsche med. Wchnschr., 53: 565-566 (April 1) 1927.
- 27. Thomson, J. J.: No. 68289. Agranulocytic angina; report of two cases, Laryngoscope, 38: 395 397 (June) 1928.
- Haverkamp, W. C : No. 77833. Agranulocytosis, Nederl. Tijdschr. v. Geneesk. 71: 2158, 1927.
- 29. Babbitt, James A.; and Fitz-hugh, Thomas. jr.: Agranulccytic angina, Arch. Otolaryng. 12:439, October, 1930.
- 30. Rutledge, B. H.: Hansen-Pruss, O. C.; and Thaver. W. S.: R current agranulocytosis, Bull. Johns Hopkins Hosp., 46:369, Jan.-June, 1930.
- 31. Talley. James E.; and Griffith, George C.: Agranulocytosis, M. Clin. N. Amer., January, 1930, p. 1079.

## A RATIONAL TREATMENT OF PNEUMONIA

(A Paper with a Message) H. T. SAFFORD, Sr., M. D. El Paso, Texas

(Read before the El Paso County Medical Society at the January 11, 1932 meeting.)

Preumonitis, Osler's captain of the men of death, continues unabated to take its annual toll. Remedies and measures unnumbered have been advocated for the amelioration of this disease. It sometimes seems that we are about where we were when Dr. Osler sounded his caution against over-treatment, and warred the, then, younger generation of doctors that pneumonia is apt to follow an unmodified course to its termination in recovery or death, and that injudicious attempts to profoundly influence this disease, might easily occasion harm instead of benefit. In the interest of brevity I purposely discarded all reference to, or discussion of, the early history of pneumonia therapy. Outstanding remedies in the last half century that have found acceptance in the treatment of pneumonia are quinine and quinine derivatives, vaccines, phylacogens, and serums. The last named member of the latter group is the only one having a real claim to scien-'ific consideration.

Digitalis in heroic doses has its advocates. The early and plentiful use of oxygen is increasing in favor. Osler, in his Practice of Medicine, mentions quinine as being much in vogue, but he, himself, believed it of no value as a pneumonia specific, and said there were other better antipyretics.

As to such strenuous measures as deep digitalization, profound protein shock and the like, while sometimes accomplishing seemingly miraculous cures, such remedies are to be regarded in the light of two edged swords, always frauglet with the possibility of resulting diaster.

Antipneumococcic serum, in certain types of pneumonia, has proven curative beyond doubt when given in sufficient quantities. The vast majority of sufferers from pneumonia are not likely to have either typing or serum administration. Even when available, the serum treatment is by no means on a plane with diphtheria antitoxin. A more simple treatment of ready application must be selected for the average pneumonia patient. Oxygen has proven its value but its cost makes it prohibitive for the poor.

The method of treatment which I now describe is neither costly nor difficult and is within the reach of all. The hospital and the trained nurse are of course, highly desirable, but not essential.

For years I had been using quinine in com-

bination with other drugs in the treatment of pneumonia and, as I thought, with considerable benefit. My present method and use of this drug came about in this way. One of my patients had such persistent vomiting as to render impossible ordinary oral administration. I resolved to try giving the same medication in greatly increased dosage by enema. The results were so surprisingly good that I decided to make this a routine treatment. Just why the quinine mixture administered in this way should prove so much more curative, I am unable to explain, but repeated trials have seemed to confirm the fact that, in most cases at least, it is definitely curative.

In almost every instance, since adopting this plan of treatment about two years ago, I have found that subjective symptoms disappear, and pulse and temperature are brought to normal, or nearly normal, within forty-eight hours after beginning treatment, although physical signs in the chest may persist for a number of days, and are to be regarded as a warning that patient is not to be let out of bed too early. Cases treated include typical lobar pneumonia with extensive consolidation, tuberculous pneumonia and a number of others, probably to be classified as bronchopneumonia, in which the only findings were localized crepitant rales accompanied by cough and bloody expectoration. This list included quite a number of o'd people who responded as readily as did younger individuals.

I am inclined to believe that not a little of the benefit secured in these cases is the result of the consideration given the alimentary tract. The routine includes an evacuant enema every twenty-four hours and a complete denial of food the first day. Thereafter, beginning with nutriment which places the least tax upon the digestive system, a gradual increase of food is allowed as the individual shows increasing digestive capacity, the greatest care being taken not to exceed the patient's tolerance. When one considers that with the onset of a severe pneumonic process the patient is practically overwhelmed by the toxins let loose within the circulation, it is easy to conceive that the digestive processes are usually in complete abeyance. Secretions are stopped and intestinal motility is suspended or even in a condition of reverse peristalsis. If nourishment be given at this time there must result the absorption of products of imperfect food digestion which may add more than we know, to the distress of the patient.

While this treatment seems to be effective in other conditions than lobar pneumonia, I would not expect it to be of much

value in a frank bronchopneumonia, with concomitant catarrhal involvement of the rest of the lungs, nor in the influenza pneumonia, that malady which seems to respond so little to any known therapy. While this treatment, later to be given in detail, has seemed to accomplish remarkable and rather constant results up to the present, I am only too well aware that the alleged virtue of many a therapeutic fails to stand the test of more general application. One naturally prefers to wait until his position is proven beyond all doubt before making any very positive statement. In this instance, in the very midst of the pneumonia season, I am moved for several reasons to urgo that a trial be given of this treatment of rneumonia.

First; because of its apparent efficacy in my hands.

Second; because of its easy application and impossibility of doing harm. Real quinine idiosyncrasy is rare.

Third; because it is a sane, rational procedure, which even if in general use, the reported curative value of the quinine enema should not be realized, the patient, because of the care given the gastro-intestinal tract, has been placed in the most favorable position to be benefitted by any further measures that may be instituted. Indeed, no symptomatic requirement should be overtooked, but should be met with common sense therapy.

For respiratory embarrassment, camphor in oil or other respiratory stimulant. Pain and excessive cough usually yield to code in sufficient doses. Strychnia may be added if the pulse be weak. Mustard leaves and later big wet hot flaxseed poultices are also helpful in control of pain. Whiskey in reasonable doses helps to relieve cyanosis, though oxygen is superior if it can be had.

And so on, suiting each necessity as indicated.

#### TREATMENT IN DETAIL

It goes without saying that the patient should be given all those little aids that go to make up for him the best possible advantage. There should be a cheerful, well ventilated, but not cold room. The open window or out door plan does not lend itself to the treatment by enema. There is too much chance of chilling with the possible increase of pulmonary congestion.

A good nurse is desirable, but any intelligent attendant can carry out instructions. It should be impressed upon the patient that, though the treatment by enema is a good deal more troublesome than medication by the ordinary route, it will prove so much more effective that it is worth all the bother.

And the patient should be made to understand that it is absolutely necessary that he remain as quietly as possible in bed; that any attempt to get up or even sit up, might result disastrously.

Among the little things that help the pneumonia patient is one that I believe is most important and least appreciated. refer to the control of fear. The word pneumonia should never be mentioned in the patient's home. For the patient, the diagnosis should be made of influenza, slight pulmonary congestion or there should be recourse to some other evasion. To some responsible member of the family, the true condition should be told, but it should remain a secret between this person and the Anxious members of the family hovering about with grave faces do not contribute to the spirit of optimism which is so necessary for the patient's morale.

#### THE PRESCRIPTION

R.

Pulv. Ipecac et Opii gr. XII Acetphenetidin gr. XXXVI Quinine Sulph. gr. L Ft. Chart. No. VI.

Sig. One powder, in half cup of luke warm

water by enema every six hours.

In beginning the treatment an evacuant enema, consisting of a liberal teaspoonful of salt in a quart of warm water, is first given, to be followed one hour later by one of the powders in four or five ounces of luke warm water, administered with a large bulb syringe. It is important that the syringe be a single bulb, in fact a large sized infant syringe. If a bulb syringe be ordered often one with bulb tubing and valves may be supplied. This is entirely unsuitable, and by eausing introduction of air may occasion distress to your patient and failure to get results. After the first powder, one is administered every six hours day and night, and of course, are to be retained as long as possible. The evacuant enema is to be given once each twenty-four hours and, when used, should procede medication by an hour, as in the first instance. The medicinal enemas are usually retained without much difficulty and seldom cause any discomfort. In case of any bowel irritability this may usually be allayed by the insertion of a suppository containing tannin two grains, and opium one grain. If the patient be actually vomiting, the evacuant enema may help relieve this distress by tending to overcome reverse peristalsis. Sometimes the vomiting yields to small doses of sodium bicarbonate. teaspoonful is added to a glass of hot water and a tablespoonful of this administered every ten minutes for six doses or more.

As soon as water can be retained, it should be offered freely. Sodium bicarbonate should be then given in teaspoonful doses three times daily or one of the many proprietary alkaline preparations may be substituted if found more palatable. No other medication should be given by mouth, but all indications met by subcutaneous intramuscular or intravenous routes. If the patient has been much weakened by vomiting, the earliest nourishment should be one of the proprietary predigested food preparations. These contain partly digested proteins and carbohydrates in soluble forms, and about twenty per cent alcohol. They are readily absorbed without putting any tax upon the digestive system. As soon as may be, orange juice is ordered to be taken freely. As improvement occurs, clear broth may be given and the diet gradnally increased, as tolerance is developed. Almost immediately after beginning treatment, an amelioration of distressing symptoms is experienced by the patient. After twenty-four hours, the temperature is less and the pulse rate lowered. Both temperature and pulse may be normal, or nearly normal within forty-eight hours. By this time a mild degree of cinchonism is often present, and the rowders are to be discontinued for from twelve to twenty four hours, to be renewed if temperature continues. In mild cases a course of six powders is sufficient and in no case have I found it necessary to use more than the second course of six powders.

In conclusion, I would say that I think it highly improbable that this method of treatment should effect any miraculous cures in the graver types of pneumonia, but I am equally certain that it does have a definitely favorable effect upon lung inflammations and since it is certainly a safe and sane procedure, is it not worth a careful trial, even though it be a little more troublesome in application than the more usual

manner of oral administration?

#### IMPRESSIONS OF AND SUGGESTIONS FOR STAFF MEETINGS

S. I. BLOOMHARDT, M. D. Phoenix, Arizona

(Read by Chairman-Elect at the Staff Meeting of the Good Samaritan Hospital, on October 26, 1931).

After a period of five years of attendance at staff meetings, and after serving two years as secretary of this staff, a few thoughts or ideas for their betterment have come to my mind. The meetings at both hospitals, I believe you will all agree, have been progressively better and more interesting. The record of hospital activity which is read at the St. Joseph meeting and the re-

view of charts of deaths given at this hospital give us a working idea of staff activity, the type of records being kept, and the degree of good, indifferent, or unfortunate work we are doing. Personally, I have derived considerable benefit from the reviews given by the chairman of the Records Committee at each meeting here and it is my hope that they will continue to be well studied, high grade, frank, and honest presentations. The case reports during the past year, with very few exceptions, have been of high standard. I think the reason for this is the fact that the doctors have been working up their cases, and writing down the principal points of interest and the discussions. Very seldom do we have the fumbling through charts, trying to find this datum or that, mixing up the history with clinical data, the physical with the operative chart, the laboratory findings with whatnot. Those who have the ability to get on their feet and review a case extemporaneously without writing it out, are very few, indeed. When one can do it acceptably, certainly it is most interesting, but for our minutes and records a written case review and discussion should accompany this presentation. During my secretaryship of two years, only on two occasions have I had any one of the staff members come to me and tell me he had an interesting case and would like to review it and have it discussed before the staff. Just the why of this I am not able to understand. I do not believe it is lack of interest, but rather due to the fact this custom has never been inaugurated and the staff members become so used to a chosen few working up all the cases and papers and being asked to do so, that when they do have an interesting case, they shrug their shoulders with a "What th' hell!" So I might suggest that, hereafter when any member of the staff has an interesting case, tell the secretary of it and in that way perhaps our case reports and papers will be even more interesting. I have tried hard to ferret out interesting cases, or cases which will bring out the most beneficial and up-to-date knowledge and discussion, but you can realize what a task this is and how often more interesting and instructive cases are passed by. It has been said that "advice is easy to give, hard to take, and usually of little value", but in regard to writing up papers, permit me to quote from one of my former surgery chiefs and associates, Dr. Walter Estill Lee: "I would advise the younger men to write papers, and in writing bear in mind what the old minister said, 'Few souls are saved after the first fifteen minutes of the sermon'. Write the paper not to show

how learned you are, or to show the high type of man who may be in your audience that you are in his class, but rather try to tell those in your audience, who may not know as much about the subject as you do, something that may interest and help them. Do not try to make too many points. The late Dr. A. J. Ochsner used to say, 'If I can carry two lessons in each paper, it is about all the average man, whom I want to reach, can absorb at one sitting; anything over five would be lost.'

"In urging you to write, I do not wish to stress the idea that your papers will be valuable to anyone but yourself, but they will be of incalculable worth to you because they will crystallize your ideas and will bring forward questions you have not answered and must study further.

"In delivering papers and addresses, begin by presenting them before small societies and work up to the national organizations; you will find men in small societies equally as bright and eager to learn as you will find in the large societies."

You will all agree this is sound advice and none of you have ever prepared a case report or paper without it being of incalculable worth to you and of some worth to the average of us. So, again, I would like to urge any or all of you to let your staff officers know of anything of interest and, if it is their desire, they can put in on the program.

The increasing frequency of lantern slides to demonstrate findings or show us figures along with the papers also has a tendency to make our meetings more scientific and valuable. We decided during the past year to make our meetings more open and our constructive criticism more direct, but this has never been carried out, probably because of fear of causing enmity between staff members and of interfering with the financial stability of the hospital. Personally, I wish we could work out a friendly method of checking up and helping those of us who are not doing the best work and cheering those of us who are doing very good work, for their efforts. Progress is the watch-word of science and it is undoubtedly an important quality of mind in seeing one's period and one's work in its proper perspective. I think if it were possible to have every member of the staff, for example, as chairman of the Records Committee for one month, it would be a good thing. When you review the case records of the month and find one man has a high mortality in some one pathological condition and go back over the card index of records for months back and find he has

been having that same bad record, should there not be a way we can help him and, if we cannot help him, do something to help society as a whole? When you study the card index and find the mortality for this operation and that operation much above the average mortality of the medical centers, it seems to me again, we should all try and help. This state of affairs is not only a local one. It was my privilege to have dinner with Dr. Bloodgood the past winter during his short stay in Phoenix and after dinner, in our conversation, he abruptly asked me two questions: first, how honest was the surgery and medicine of the Southwest; and second, would I consider the surgery good surgery? And he told me that all over this country this was one of the big questions of the profession and among the educated lay people. Willis and Beaver tell us that surgeons can no longer ignore the fact that the surgical judgment, in par-ticular, and the surgical technic outside the great clinics is "almost criminally defective". In an area where the vital statistics had been kept accurately it was found that the deaths from appendicitis per 100,000 population have increased 31 per cent between the years 1905 and 1922 and during the same period there has been an increase of 77 per cent in deaths from gallbladder disease and 250 per cent in deaths from goitre. It is unfair to credit all of the increasing mortality to poor surgery, but we must admit that, in the later years, these conditions are being more generally and more radically treated by surgeons than in 1905, and it is certainly probable that the increased mortality is, to a large measure, due to injudicious and unskilled surgery. statistics should awaken in the conscience of every one of us a new sense of responsi-Notwithstanding the advance in knowledge of anesthesia, our increased knowledge of function and pathological changes, our ability to detect pre-operatively surgical handicaps, and our increasing knowledge of post-operative complications, statistics show this enormous increase in the mortality rate of surgical diseases. But, unfortunately the mortality rate in surgery is not the only indictment which we must bear; I refer to those cases all of us examine after they have been operated upon once, twice or more times, and find the results of surgical intervention most disappointing. There is most always in these cases, evidence to show that the reason operation fails to afford the patient symptomatic relief is that the fundamental cause of the trouble has not been discovered and removed. The feeling is rapidly growing

that isolated lesions in any one organ rarely occur. This group of unimproved and disabled operative cases was called by the late Dr. Joseph Price "surgical junk". Although exact relationship between disease changes in one section of the gastro-intestinal system with those in another is not known, the feeling is growing that isolated lesions in any one organ rarely occur. Biliary disease, for instance, is invariably associated with disease of other viscera, especially the liver, kidney and pancreas. And so with other systems of the body; there is a relationship between them and they are gradually being worked out and demonstrated by our scientific leaders.

The excuse for increasing mortality and disability cannot be for lack of material equipment because in our country, even in the smaller communities, the hospital equipment and the surgical opportunities are beyond criticism. Monihan tells us in one of his lectures that surgery is not learned easily, the training is hard and lasts a man's lifetime. "It must be under a master's eye and be influenced by his criticism not less than by his spiritual encouragement. It must not be light heartedly or recklessly undertaken nor can it be a matter of display. Since the war, especially, the incompetent and ill-trained surgeon is allowed too free a hand and enjoys too wide a scope. The methods of surgery learned in the war do not fulfill the needs of civil life. The emergencies of war, the hates of war, and the sudden and heavy pressure of urgent work, made it necessary to have operators at once available. is today too much bad surgery; surgery performed by those who have, perhaps, some natural skill but which has never been trained and moulded to right practice. In surgical work, craftmanship is much and knowledge is much, and wisdom, which is the timely and rightful application of knowledge, is more, but as we establish our place in the world, it is chiefly character that counts."

But I have digressed to a considerable extent from the purpose of this paper. I gave notice it was to be a "hot weather paper"; by that I meant a rambling, easy-to-write affair, in which I could jump about from point to point without particular reason or thought, nor has anything I have written written in the sense of criticism either local or general, for the big reason I fear my own work would not warrant criticism of that of others. But in concluding I hope our staff meetings become somewhat less formal, that discussions or criticism be entirely constructive and lose the sting they occasionally possess, that advice be more frequently given or ideas suggested by those who have had

broader and more recent training and bigger experiences, and this advice or suggested ideas be given in a friendly manner and be accepted as such. In a small community, such as this, it is very hard even with considerable reading and visiting of clinics, to keep abreast with the best in medicine and surgery, but I do think we can help each other more right here in the staff meetings, and by doing that, help society at large.

#### A CASE OF DISSECTING ANEURYSM OF THE AORTA

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(Presented to the Staff Meeting of the Good Samaritan Hospital, Phoenix, Ariz., Oct, 1931.)

L. H. H., male, aged 55, entered the hospital at midnight of Sept. 17, and died the next afternoon at

3 p. m.

His health had always been very good without serious illness. About two weeks before entering the hospital, he began having headaches daily. Three days previous to his admission, he went on a squirrel hunt, and during this expedition, while hunting for game, he was suddenly seized by an acute attack of pain between the shoulders and upper back. A passerby found him in a state of collapse and summoned the family to whom he complained of this intense pain, of weakness and of a general feeling of numbness. He was nauseated and vomited persistently. A local doctor examined the urine and told him that he had Bright's disease. The next day, his condition remained about the same, though on the third day, he began feeling a little better for a short time. Ever since the onset of his illness, he had passed very little urine. There had been no vertigo, tinnitus, diarrhea or indigestion. The past history was essentially negative except for the fact that he had had night voidings for several years. There was nothing of significance in the family history.

Physicial examination showed a well nourished, muscular, middle aged man, who appeared drowsy and stuporous, but could be aroused and answered questions intelligently. He complained of almost total blindness. The temperature was 99, pulse 112, respirations 30, blood pressure 244/60. The skin was rather deeply cyanosed and there was slight clubbing of the fingers and toes. The pupils were constricted but reacted to light. Rough neurological examination was entirely negative. The teeth were in wretched condition, many missing, some carious stumps. There was retraction of the gums and marked pyorrhea. Patient breathed normally except for slight increase in rate and depth. The lungs were clear. The heart was enlarged to the left, action forcible and regular, and there was a ringing, accentuated second aortic at the apex. There was a musical, mid systolic murmur, transmitted into the left axilla. The peripheral arteries were all markedly thickened. The abdomen, genitals and extremities were all normal.

Laboratory studies showed a leukocytosis of 19,-500 with 87 per cent polymorphonuclears, a urine of high specific gravity, loaded with albumen, casts of all description, white and red cells. The NPN was 75 mgm.

The diagnoses made at this time were: acute nephritis, chronic arteriosclerotic nephritis, apical arteriosclerosis, chronic myocarditis, uremia, hemorrhage in unknown locality.

On the night of admission subcutaneous infusion, hot packs, and cathartics were ordered. He was catheterized but no urine obtained. The next morning however, following the continued forcing of fluids by mouth, by colon irrigation, and by infusion, he voided liberal amounts of smoky, rather highly colored urine.

The patient was again seen the same day. He gradually became more stuporous, his pulse became rapid and thready, the blood pressure dropped progressively, and he finally lapsed into coma and died

apparently of circulatory failure.

Autopsy: (Dr. David M. Davis). The exterior of the body showed nothing of special note. were no wounds or injuries, no edema and no disproportion between the upper and lower parts of the body. The muscles were very well developed, the man evidently strong and robust. The abdominal contents appeared normal, except that the appendix was completely retrocecal. It showed no signs of inflammation. The bladder was moderately distended, containing about 500 cc. of urine. On removing the sternum, it was noted that some of the mediastinal fat was suffused with blood and further examination showed that the upper mediastinal tissues were thickened and ecchymotic. This ecchymosis was most pronounced on the left side and continuing down past the hilum of the lung, as far as the diaphragm. The heart was markedly enlarged and firm. The pericardial sac was smooth and normal in appearance, but containing a moderate excess of blood tinged fluid and near the point where the pulmonary artery disappeared, a little of the ecchymosis could be seen on its interior surface.

Both lungs showed very marked anthracosis, but were not adherent anywhere and the pleurae were smooth with no excess of fluid. Inspection, how-ever showed a number of small petechiae on the parietal pleura on both sides. Both lungs, on removal, were everywhere crepitant with no nodules or areas of induration, and no evidence of edema. The heart was about twice normal in size, the increase being due to a tremendous hypertrophy of the left ventricle. The tricuspid and pulmonary valves were normal. The mitral valve showed a definite, but moderate nodular thickening along its free edge. The aorta was slightly thicker than normal and showed a moderate degree of atherosclerosis with superficial yellow plaques. This atheroma involved the aortic valves to a slight extent, but apparently not enough to interfere with their competence. The coronary arteries were thickened, but everywhere patent. The myocardium showed a few small gray fibrotic areas; they were not adherent plots. small and large intestines were normal. The spleen showed a slight degree of acute congestion with a grayish red pulp, which scraped off easily. The liver was of normal size and appeared with no evidence in cut section of fatty degeneration or necrosis. The gall bladder was normal in appearance with no thickening and no adhesions. It contained green bile of normal consistence, which was pressed easily into the duodenum. The pancreas was nor-mal. The stomach and duodenum were normal.

Attention was then turned to the mediastinum. The pulmonary arteries were normal. The main bronchi and trachea were normal. The aorta was then slit up and it soon appeared that the ecchymosis was greatest about the aorta. In removing a segment of the descending arch for microscopic examination, the scissors passed into a good sized cavity filled with blood clot and it became apparent that there was a dissecting aneurysm of the aorta.

Unfortunately the amount of cutting which had been done on the aorta made it impossible to discover with certainty, the point of rupture. Careful probing then showed, that the cavity surrounding the aorta, extended up to, including part of the arch and a small portion of the innominate artery. Both common carotids were normal, downward the cavity was probed as far as the root of the diaphragm, and where the aorta lay free (entirely) in the cavity. The entire mass of prevertebral tissue including the kidneys was then removed from a point just below the bifurcation of the aorta to a point just below the larynx. Dissection of the renal arteries showed that they were normal up to the point of origin in the aorta on both sides, but the abdominal aorta at point about 5 cm. below renal arteries was surrounded by a cavity containing a thin layer of blood clot. Further dissection was postponed until after fixation. The kidneys were removed from the specimen, the fatty capsule on each side was normal. The true capsule was slightly adherent throughout. The surfaces of both kidneys were slightly irregular, paler than normal and covered with a multitude of fine petechiae. They were about normal size, the left somewhat larger than the right. On cross section, the pelvis was normal, except for excess of peripelvic fat. The cortex was markedly thinned averaged about 4-5 mm. in thickness, and showed a fine mottling throughout. The general effect was about normal color, but close inspection showed that there was a pale background with many tiny areas of hyperemia. The ureters were normal on both sides. The bladder was thin, the surface smooth and pale. The trigone was Y shaped and not elevated. The ureteral ordifices were normal in size, position and appearance. The vesical orifice was normal in appearance, but showed moderate contracture, not admitting the tip of the little finger. The prostate and rectum were removed in one piece. The rectum was normal, the prostate appeared normal externally, but dissection was postponed until after fixation.

Anatomical diagnosis. Arterio-sclerosis with hypertension. Rupture of the thoracic aorta. Dissecting aneurysm of the thoracic and abdominal aorta. Hypertrophy of the left ventricle, chronic mitral endocarditis, chronic myocarditis (slight), chronic nephritis (arteriosclerotic), acute ischemic nephrosis, contracture of the vesical orifice (slight), retrocecal appendix.

Microscopic examination, by Dr. Paul Guttman (only sections of the kidney and aorta are here

considered).

Kidney: There is a marked congestion of all capillaries and veins throughout the sections examined. The capillaries of the glomeruli are markedly distended. The proximal and distal convoluted tubules show a marked degree of hyaline granular degeneration. The small arteries show marked thickening of walls. There is a moderate degree of subendothelial deposit of hyaline in the small arterioles. There is no evidence of recent or old inflammatory changes.

Aorta: Sections through various portions of the abdominal and thoracic aorta show the following changes: There is a splitting of the media at about the junction of the inner two-thirds and outer onethird. The space between these portions is of varying size and contains blood clot. A thin layer of recently formed thrombus is present over the exposed surface of the media. Immediately beneath this thin layer of thrombus is a moderate reaction of polymorphonuclear and an occasional lymphocyte. The vessels of the adventitia are markedly hyperemic and there is also a moderately acute vascular FEBRUARY, 1932 83

reaction in this layer. There is no evidence perivascular infiltration of lymphocytes in vasorum. The media appears normal, other than the changes described above. The intima in most places is markedly thickened. There is a marked increase of hyaline connective tissue which, in places, shows a marked degree of fatty degeneration.

Impression: The examination of the vessel walls indicates no evidence of syphilitic involvement. There is a marked degree of atheromatous degeneration of the vessel which might be considered in the etiology of the dissecting aneurysm. The question of a mesarteritis must be considered, as this condition is often thought to precede the formation of dissecting aneurysm. The marked congestion and early degeneration in the changes of the kidney could be well explained on the basis of vascular disturbance caused by spreading of the dissecting aneurysm about the vessels of the kidney.

#### DISCUSSION

DR. DAVIS: These findings explain perfectly all the symptoms of the final illness. The sudden attack with pain between the shoulders. numbness, weakness, faintness, nausea and vomiting. In retrospect it appears to me that there may have been some disproportion between the circulation of the upper and lower extremities. The radial pulse was full and bounding, while the feet, as I remember, were slightly pale and a trifle cyanotic. Had one had this extremely rare condition in mind, it might have been possible to guess the correct diagnosis. The case, however, is a beautiful example of the importance of doing autopsies, and is also another example of the various lesions which may give a picture simulating acute nephritis.

DR. BALDWIN: There are certain features in this case that are of great clinical importance because they point definitely to a syndrome, which although extremely rare, is as striking and characteristic as the clinical picture of coronary occlusion. Now that all evidence can be viewed, it is clear that the true diagnosis should have been suspected from the beginning. I have only seen two cases of dissecting aneurysm that came to autopsy, and in each of them, the wrong diagnosis was made during life. In one coronary occlusion was suspected, in the other

acute pancreatitis.

In this case there were indications strongly suggesting a vascular accident. (1) In the first place, the patient had been perfectly well and suddenly developed an acute pain in the back and went into collapse. This in itself is certainly not suggestive of acute nephritis but rather of a hemorrhage or coronary disease. (2) In the second place, the pain was between the shoulders and in the course of the thoracic aorta. (3) In the third place, there was fever and leukocytosis, which almost always accompanies any vascular accident. (4) And in the fourth place, there was widespread evidence of vascular damage such as thickening of the peripheral arteries and hypertension. With these points properly correlated, the urinary evidence of acute nephritis should have actually assisted in making a correct diagnosis, instead of throwing one off the track, because with the other points in mind, it should have suggested a hemorrhage in which the kidneys were affected. This condition could only be explained by pressure on the renal vessels so as to produce an acute ischemia. This is of course, exactly what occurred. The dissecting aneurysm by extending beyond the renal arteries caused pressure to be exerted upon the vessels, thus interfering with the blood supply to the kidneys.

I have seen one condition in which a similar pic-

ture of nephritis was produced by pressure on the renal vessels, and in which the diagnosis was only made at autopsy. In this patient however, the symptoms were gradual in onset and the nephritis was of a more chronic nature. The patient in a matter of months went through all the stages of failing renal function, and finally died of uremia. Autopsy revealed Hodgkin's disease involving the retroperitoneal nodes. These enlarged nodes produced marked pressure on the renal vessels so that there was an inadequate blood supply to the kidneys, resulting in renal insufficiency.

In conclusion, it may be emphasized that when patient has hypertension and general arteriosclerosis, any sudden train of symptoms, followed by circulatory collapse should strongly suggest hemorrhage or coronary occlusion. If such an individual also has evidence of acute nephritis, then a dissecting aneurysm of the aorta should be suspected.

It is important to differentiate clinically dissecting aneurysm of the aorta from acute nephritis, because the prognosis is very different in the two conditions, the former being hopeless and the latter having a fair chance of recovery.

#### RADIOSENSITIVE TUMORS

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(Presented and discussed at the Staff Meeting of St. Joseph's Hospital, Phoenix Ariz., June 8,

Casc 22637: School girl, age 7, entered hospital May 14. History of good health until May first, when she had some pain in abdomen lasting a few hours; two days before entering hospital she had a recurrence of the pain. Dr. Penn of Lichton was called. He found an abdominal tumor and referred child to Dr. Greer who placed her in the hospital for study. Examination showed an elongated mass in the right side extending downward toward pelis; it was not tender, was somewhat movable, and was apparently notched in the middle. Girl was in no pain nor shock. X-ray examination for possible bowel obstruction was made without revealing evidence of this. During this examination heavy lung densities were found which had the characteristics of metastases. Urose'ectan showed marked dilatation of right kidney pelvis and calvees and displacement upward of kidney. Urine and blood were nermal. except for 10 to 15 pus cells per high dry field. Temperature ranged from 99 to 100, pulse 100 to 120, respirations 25 to 35.

Conference of Cancer Committee was called and

they concluded that surgery was not advisable, and

that radiation should be tried.

DR. GREER: Here is a child eight years old presenting a large indefinite mass in the abdomen. What is it? The history does not help a great deal. She had a little pain two weeks previous to the time first seen and was slightly ill, but not enough for a physician to be called. When seen she complained of pain in the right lower abdomen, severe enough to cause her to cry. No further history could be obtained and no past history of importance.

Upon physical examination the child did not look

sick. She was somewhat undernourished, the heart sounds were normal, there were some indefinita rales in the chest. Upon inspecting the abdomen the musculature stood out prominently but she lay with the thighs and legs extended. Upon palpation one was first impressed with the hardness of the ab-domen and upon deeper palpation a large hard mass could be made out, extending from the liver area

down the right side into the groin and over to the left side below the umbilicus. The mass was slightly irregular, not nodular, and presented a definite notch, or what felt like a notch. The lower part gave a rather cystic feel although very tense. Bimanual palpation with one hand over the loin and the other over the abdomen gave the sensation of a large continuous mass slightly movable. It could be felt distinctly from behind between the spine and the twelfth rib.

The various tumors of the abdomen that come to mind in the differential diagnosis of this case are:

Polycystic kidney.
 Hydronephrotic kidney.

3. Hypernephroma.

4. Sarcoma of the kidney and retroperitoneal sarcoma.

Tumors of the gall bladder and liver.

6. Tumors of the cecum and colon. Cysts and sarcoma of the ovary.

Upon further study it was found that there were peculiar dense areas throughout the lungs, shown by the x-ray, that were intrpreted as metastases from some malignant tumor. This immediately ruled out, in our minds, all the benign tumors mentiened above, such as ovarian cysts, polycystic and hydronephrotic kidneys, etc. This then left us with the malignant tumors of the abdoman. Where did this tumor arise? Geographically, this tumor was in the region of the right kidney. Upon examination with uroselectan, some disturbance in the normal appearance of the kidney and particularly the polvis was found. This leaves us with the most likely diagnosis of a malignant tumor of the right kidney. However, we must not be too sure of this, as it is possible to get a disturbed kidney pelvis and circulation, from tumors outside the kidney.

What are the malignant tumors of the kidney? Hypernephroma, sarcoma and a myxo-sarcoma of the fatty capsule of the kidney. Several years ago Kerley of New York had the following to say about malignant tumors of the kidney in children:

"Adenosarcomata and adenocarcinomata have been described and the degree of malignancy cannot be determined by their histologic structure. Malignant neoplasms of the kidney are more common before the fifth year of life than in any succeeding decade. The tumors have been classified as carcinomata and sarcomata. Most of the growths, however, are atypical mixed tumors of embryonic origin, and may contain striped muscle, cartilage, and lipomatous or fibrous connective tissue. To such forms the term rhabdomyosarcoma has been applied. The hypernephroma is derived from suprarenal tissue, which may be in the developing kidney. This tumor is subject to great variations in size and structure, and may resemble sarcoma, adenoma, carcinoma or perithelioma. The growth characteristically centains pigment, which is identical with that found in the adrenal. Not infrequently the hypernephroma becomes cystic. Malignant growths of the kidney often attain enormous size, half filling the abdominal cavity and displacing certain of the contained organs. The abnormal mass is usually m vable and occasionally communicates pulsations from the subjacent aorta. The edges of the tumor are more rounded than those of an enlarged spleen or liver, and the anterior surface is less closely related to the ribs. Apart from the local physical signs, the patient may present no significant symptoms. Nutrition, however, is generally impaired, and in many instances the tumor occasions dragging rains and hematuria."

Coming back to the differential diagnosis of this

You may ask why a pyelogram was not done. Drs. Ketcherside and Shields did not feel that enough additional data and information would be

obtained to warrant the procedure. If there had been hematuria we could have been sure that the tumor involved the kidney, but so far as we could determine there was no hematuria. In a child it is sometimes impossible to distinguish a renal swelling from a sarcoma of the retroperitoneal cellular tissue, situated on the median side of the fatty capsule of the kidney. Usually these tumors lie nearer the median line and cause but little displacement of the colon. However, when they are very large it is quite difficult to differentiate them.

Sarcoma of the ovary can usually be traced to the pelvis. In this case it seemed that the tumor was more associated to the region of the right kidney

than the pelvis.

In this case it was difficult or impossible to palpate or percuss a line of demarcation between the liver and tumor. There was more bulging in the lateral abdominal wall and also posteriorly than would be expected in a tumor of the liver.

In so far as the diagnosis before any treatment was instigated it would seem to me to rest between adenosarcoma of the kidney and hypernephroma.

Case 22754: Young Mexican man, age 19, student. First seen by Drs. Carlson and Gaede of Jereme about April 10th, at which time he complained of shortness of breath and cough of about a week's duration. He was unable to sleep on his back on account of dyspnea and some pain on coughing. The dyspnea grew steadily worse and cough more aggravating, and neck began to enlarge. At time cf first examination he had lost 12 pounds in weight and had lost strength perceptibly. Lymph nodes were palpable in neck and groin, with chest dullness anteriorly to mid-clavicular line. X-ray on May 14 (at Jerome) showed a large tumor in posterior mediastinum, extending to mid-clavicular line on each side and not visibly pulsating when observed under flueroscope. Lymph node excised and sent Urine negative. for pathological examination. Blood: On May 16, reds 5,170,000, whites 28,700, about 50 per cent polys. Hbg. 90. On May 18, whites 33,600. On May 19, reds 4,800,000, whites 54,500, 20 per cent polys and about 70 per cent premature lymphocytes, platelets scant. Patient was sent to Phoenix for advice as to radiation treatm nt and entered this hospital May 20. Blood count here was 44,300, 80 per cent lymphocytes, 18 per cent pelys, 2 per cent eosinophiles.

DR. MILLS: The summary given contains practically all the positive findings in this case, both from the laboratory and physical examinations, except for report on tissue specimen which was a cervical lymph node, removed while in Jerome and reported upon before the patient came to Phoenix, as follows: "Sections show densely packd small round cells with deeply staining nuclei and without definite arrangement. We would consider as a new growth, evidently some type of lymphoma; the question of malignancy not definitely ditermined. Are there any abnormal blood findings?

The diagnostic problem apparently limits itself to the question of the nature of the tumor formation in the mediastinum and associated enlargement of lymph nodes in neck and groin. Tumors of the thymus occur which give an outline on an anteriopostorior roentgenogram identical with that shown on the first film of this case. Thymomas of lymphosarcoma type are reported which metastasize to the lymph nodes, both the cervical and axillary. The tumor in this case is in the posterior mediastinum which would eliminate the question of a thymoma.

The large size of the mediastinal tumor and the relatively slight enlargement of the cervical and inguinal lymph nodes suggest that the primary growth is mediastinal. This is supported also by the presenting symptoms of cough and dyspnea.

Considerable difficulty is often encountered in the diagnosis of lymphoid enlargements, for the reason that this tissue responds to many influences, such as irritation from toxic substances, show hyperplasia from inflammation, and in the leukemias, as well as the hyperplastic changes due to involvement in new growth. Also the cells of lymphoid tissue are quite mobile as compared with most of the fixed tissue cells of the body. So that tumor processes tend to spread diffusely and quite promptly to other lymph nodes.

The most common cause of lymphoid enlargement is tuberculosis which induces overgrowth of all the cellular clements, the lymphocytes, reticulum cells and endothelium. It is sometimes difficult to determine when we are dealing with a granuloma or a new growth but in this case the evidence at hand would seem to exclude tuberculosis or other type of granuloma.

Simple lymphoma or hyperplastic lymphadenitis is usually local or confined to one region of the body, is more or less self limited and at no time leads to systemic invasion. After a period of growth these collargements often remain stationary over a period of months or years and show little or no tendency to necrosis. Their cellular structure shows an increase in size and number of lymph follicles and overgrowth of small lymphocytes and there is absence of rapid growth, infiltration beyond the capsule, mitotic figures, atypical cell forms, and ther signs of malignancy which differentiate from lymphosarcoma.

Lymphoid hyperplasia also occurs in the various phases of leukemia. Here we find a generalized involvement of lymphoid structures of the entire body as well as systemic involvement of the blood forming organs. There is a tendency for lymph node chains in various parts of the body to become enlarged at the same time and with practically simultaneous enlargement of all the nodes of a chain or group. In leukemia we expect to find marked and characteristic blood findings, so that a diagnosis is usually evident from the blood picture alone. In this case we find blood changes which are somewhat The total leukocyte count up to 54,000 confusing. and the differential showing a marked preponderance of lymphocytes with premature cell forms. However, in the absence of knowledge of extent and distribution of lymph node enlargement and the result of biopsy we could hardly be justified in making a diagnosis of leukemia. It is possible that as further development of the lesions and a continued study might change our conclusions and we believe that lymphatic leukemia in an carly stage of its development might well be retained as a diagnostic possibility.

Hodgkin's disease, lymphogranuloma or lymphoma ma'ignum, as it is variously named, must be given serious consideration. It is not at all unusual that the lymph node enlargement in Hodgkin's disease be confined at first to a definite group, such as the mediastinal and gradually spread to other parts of the body and often respiratory difficulty brings the patient to his physician. In such cases a bulky médiastinal tumor is formed, causing marked pressure symptoms. The blood picture is not diagnostic but in well developed lesions the microscopic tissue section is quite characteristic. There is found an overgrowth of reticulum cells, together with large and small lymphocytes, plasma and endothelial cells and eosinophile cells. The proportion of these cells varies, due probably to the stage of development of the process. Frequently the cell structure resembles lymphosarcoma and recently

Levin has published a paper suggesting that these two conditions are practically identical. After a very complete study of more than 500 cases he has 'gained the conviction that lymphoma malignum (Hodgkin's disease) and lymphosarcoma are nearly identical in their clinical manifestations and that they both represent a special type of malig-nancy." Clinically the end result is similar as a fatal termination usually ensues, after remissions and exacerbations over a varying period of time. Other writers, among them Kundrat, has noted the development of lymphosarcoma from growths considered as lymphoma malignum.

In the case presented we are suggesting a diagnosis of lymphosarcoma. The evidence is possibly incomplete in some respects and perhaps after observation for a period of weeks or months and further development occurs, our conclusions may have to be changed. Mentioning a few points which suggest this diagnosis we find that we are dealing with apparently a new growth confined to lymphoid structures; that it has arisen from a group of lymph nodes, rather than from single discrete nodes over the body; that it occurs in a robust male in early adult life which is a most common period of development of this tumor, and also that the growth is apparently spreading along lymphatic channels, rather than by local infiltration.

The single biopsy specimen, while not conclusive, shows cellular structure consistent with this diag-There is found a diffuse hyperplasia of lymphoid cells, mostly small, but in part large round cells, many showing hyperchromatic nuclei and along the capsule of the node there are pockets of atypical cells which have broken through and occupy irregular spaces beyond the lymph node capsule. The blood picture is consistent, if our interpretation is correct, in that the excess of leukocytes and presence of immature calls represents an escape into the blood stream of atypical and hyperplastic cells from the newgrowth by means of the lymph spaces adjacent to the involved lymphoid structures. And, lastly we wish to suggest the therapeutic test; that of the effect of radiation upon this tumor.

If, after proper application of radium or x-ray there is not a prompt and very marked reduction in size of this new growth we would be inclined to change our diagnosis in the face of histologic, clinical and other evidence presented, since it is known that lymphosarcoma is radiosensitive to a greater d gree than any other tissue.

#### DISCUSSION

DR. WATKINS: These two cases of tumor growth are interesting and instructive from the standpoint of radiosensitivity of tumors, so that it seems worth while to present a few of the well known facts about sensitivity to radiation. The whole practice of radiation is founded on the actual and relative radiosensitivity of tissue cells, so that the first and most fundamental consideration in any condition to be treated by radiation is the estimation of the relative sensitivity of the normal and pathological cells in the area under consideration. It was only after many disastrous experiences with radiation that workers in this field established the comparative sensitiveness of normal tissue cells, and because the skin was the organ which suffered most in these experiences, the epithelial cells of the skin are taken as the basis of comparison for radiation dosage. If we take the sensitivity of the skin as the unit (1), the relative sensitiveness of the other body cel's can be graded in accordance with the fol-

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#### PUBLIC HEALTH NOTES

J. ROSSLYN EARP, DR. P. H. Director New Mexico State Bureau of Public Health SICK SCHOOL CHILDREN

February is the month of all months when children are kept out of school by sickness'. During the seventeenth fiscal year, attendance in the schools of New Mexico was 69.5 per cent enrolled. Of all the United States, Oklahoma alone had a worse record. cost of the schools to the taxpayers of New Mexico during this year was \$5,133,324. The taxpayers thus paid \$1,565,664 for teaching children that were not there. It is not known what proportion of the New Mexico absentees were kert away from school by sickness. The study made by the U.S. Public Health Service in Hagerstown, Maryland', showed that 57 per cent of absenteeism was due to sickness and 43 per cent to "other causes". If we apply these proportions to New Mexico, we find that sickness of school children cost the New Mexico taxpayers more than \$800,-000 in a single year, or more than \$2.00 per capita.

A discussion of these findings was released to the press of New Mexico on December 17 with the following comment;

"It is a striking fact that less than one fifth of these illnesses are seen by a doctor. How much time might be saved if a doctor were always consulted for small complaints—and lives too! The 'sore throat' that turns out to be diphtheria could be treated in time. Small cuts would not become infected. Fewer colds would become bronchitis."

If, as a result of this publicity, some doctor is called away from a waiting meal to see a school child with stomach ache we hope that we may be forgiven. To an experienced physician a stomach ache is often quite plainly just a stomach ache and the more or less innocent cause may be just as plain. It is important always to bear in mind that to the parent an acute appendicitis may equally seem to be just a stomach ache, and to the parent it is worth while to have many unimportant ai ments properly labelled by the physician—and to pay adequately for the labels—in order that, once in a while, important mischief may be scotched at the outset.

It is interesting that in Hagerstown only 18 per cent of the childrens' illnesses received medical attention. Of course, some complaints received medical care with greater frequency. Thus, a doctor was called to every case of pneumonia and of diphtheria. But the statistics here may easily be giving a too optimistic conclusion, for the diagnosis of pneumonia or diphtheria would not often be made without medical assistance. Only

one fifth of the sore throats were seen by a doctor, an who is to tell us that there were no cases of diphtheria or scarlet fever among the other four fifths?

#### WRAPPED MILK

An interesting visit of the English Society of Medical Officers of Health to the Bladen Dairies at Blandford in Dorsetshire is reported in a recent Lancet'. Here some 20,-000 gallons of milk are collected daily from ninety farms. As the milk comes in, it is tested and graded. The twelve farms which score highest each month get one cent per gallon extra for their milk, and the next twelve get a half cent extra. The milk is pasteurized with precaution by the holding method, before it goes out to London and Bournemouth to be sold. But the most interesting item is the wrapping in which it is dispatched, namely, in paper cartons. The weights of a half-pint bottle and of an equivalent carton are respectively about 121/4 ounces and 3/4 ounce. The approximate cost of a carton is one cent and "breakages" amount to only 14 per cent. Small cartons containing one third of a pint and intended for school children are retailed at two cents. The chief interest of this scheme to health officers lies, of course, in the fact that the container is sterile when loaded and that it is never used again.

Some American readers may be surprised to learn that Sir Ernest Debenham, who owns these dairies, got his carton idea from the Un'ted States.

#### SPOTTED FEVER VACCINE

The Hamilton Laboratory at Hamilton, Mont., is able to supply vaccine for immunization against Rocky Mountain spotted fever to physicians living in infected territory. Dr. R. R. Parker requests that the following points be observed in regard to its use:

1. Requests for vaccine should be addressed to the Officer in Charge, United States Public Health Service, Hamilton, Montana.

2. Each request for vaccine should specify either the number of persons to be vaccinated or the number of cubic centimeters needed on the basis of 4 cc. to the person.

3. Vaccine is furnished to physicians without charge and the fee for administration

should be nominal.

4. The vaccine is expensive to manufacture and amounts requested should be limited to

use which can be foreseen.

5. Reports received at the Hamilton station suggest that, if vaccine is administered soon after a bite by an infected tick, a considerable amelioration of symptoms and shortening of the course of infection may result. Physicians will therefore be justi-

fied in recommending the taking of the vaccine by tick-bitten persons as soon as pos-

sible after the bite is received.

6. Therapeutic use of the vaccine after onset of symptoms is not recommended. In sections where the less fatal types of infection occur, some physicians have so used it with supposedly good results, but the difficulties which prevent certainty on this point can be readily understood. Results in the highly fatal Bitter Root Valley cases have suggested that, in the more severe type of the disease, its use may even be harmful.

7. It is especially requested that the Officer in Charge of the Hamilton laboratory be advised of any cases of spotted fever which may occur in vaccinated persons and that as detailed a clinical record as possible

be kept of such cases.

1. Collins, S. W. The Health of the School Child. Public Health Bulletin No. 200. Washington, 1931. Pp. 159. Price 35 cents.

2. Statistics of School Systems, Bureau of Educa-

tion, 1930.

3. The Lancet, 2:1108 (Nov. 14) 1931.

#### CASE DISCUSSION

#### (Abdominal Pain of Eight Hours' Duration). J. MADISON GREER, M. D.

FRANK J. MILLOY, M. D. Phoenix, Arizona

(Case No. 16381, Case Records of the Massachusetts General Hospital, New Eng. Jour. of Med., Sept. 18, 1930, page 592.)

#### Case History

This patient was an American spinster seventyfour years old who entered the Emergency Ward on June 21 complaining of lower abdominal pain of eight hours' duration.

She gave a history of rather atypical anginal attacks consisting of a sense of constriction and suffocation in the throat and perhaps some radiation in the arm for the past three years. She was known to have had hypertension for several years, just how long is uncertain.

Dr. Burrage was called in to see her at eleven o'clock the morning of admission and was told that at nine o'clock she had sudden abdominal pain. She had five or six bowel movements, not diarrhea, and vomiting. Since that time the bowels had not moved. At the time he saw her the belly was flat, soft, not The heart rate was rapid, about 100 perhaps. Chest clear. Her niece had also had abdominal pain at the same time, and there was some question as to whether she and her niece had had the same things to eat that night. But it turned out on further investigation that they had not. Acute food poisoning or an atypical coronary attack were the things thought of. Dr. Burrage gave her one-quarter grain morphia at the time and came back to see her at three o'clock in the afternoon. He found her unrelieved by morphia. This time the abdomen was moderately distended, still not particularly tender, chest filling up with rales. The pulse was fairly rapid, about 120, with numerous extrasystoles.

She was sent in to the Emergency Ward, where she showed what has been described with the addition of extreme cyanosis with rapid shallow breathing, blood pressure 190. The blood pressure when she was seen in the morning had been 220. She was

admitted to the ward and given morphia to keep her comfortable. During the afternoon the blood pressure gradually fell to 110 by evening. She had no more bowel movements. She complained almost continually of pain in spite of one-quarter grain doses of morphia every three hours, enough morphia to bring the respirations down to 15 by evening. The abdomen became more and more distended. The pulso came down to 100 and did not seem so irregu-

The following morning she seemed better so far as the general condition went. She was better able to talk, was not so cyanotic, pulse fairly regular at 100. But the abdomen was tremendously distended and very tender; whenever we touched her or made a motion as though going to touch her she screamed. The leukocyte count was 30,000 the red count 7,500,000. During the day she grew steadily werse. The blood pressure gradually fell so that by evening it was 90 to 100. She had had a great deal of morphia, so that the respirations got down to 10 or 11. The abdomen became more distended. She had no bowel movements. During the evening she began to have fecal vomiting. The pulse went up to 120 or 130, with more or less irregularity. Apparently the chest was clear. At this time as at entry we were not able to examine her back. She died at six o'clock in the morning of June 23, the second day after entry. The leukocyte count had increased to 36,000 at that time.

#### Discussion by Dr. Greer

The outstanding points in this case are the following:

Aged single woman with acute severe lower abdominal pain, coming on suddenly followed by vomiting, a few bowel movements at first but no more; at first the abdomen was flat, soft and not tender, later it was distended and very tender. The vomiting continued and was fecal in character within twenty-four hours. Condition became rapidly worse with failing heart and disturbed respiration, death occurring within seventy-two hours after the onset. The above picture was associated with some heart signs as increased rate, later decreasing, irregularity, a decreasing blood pressure from 220 to 90, syanosis, rapid shallow breathing a rather unusual blood picture, both red and white count being high. Such a patient ill enough to die within three days with almost no history of past illness makes a very interesting case for speculation.

In a case of this kind we naturally think first of the acute abdominal conditions and endeavor to prove them or rule them out. Some of the conditions we might consider are the following: 1. Acute appendicitis, 2. Acute enterocolitis, 3. Acute salpingitis, 4. Perforated gastric or duodenal ulcer, 5. Acute cholecystitis. 6. Acute intestinal obstruction, 7. Acute pancreatitis, 8. Acute pyelitis, 9. Renal colic, 10. Gastric crises, 11. Acute abdominal allergy, 12. Mesenteric thrombosis.

In consideration of the above conditions we might discuss them briefly, in the light of what is given us in this case, as follows:

Appendicitis can almost be ruled out in a patient of this age from the history that the pain was in the lower abdomen from the first, the vomiting continued through from the beginning, the pain was never localized, there was no rigidity and the tenderness came on later. As to enterocolitis we would expect the pain to be more general, not so severe, more colicky in nature and to have continued diarrhea; nor would we expect it to be severe enough to take the patient's life in so sshort a time. Salpingitis can be ruled out by the negative past history as well as the severity of the condition, with its sudden onset and no mention of pelvic signs or (Continued on page 92)

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#### SWEET SIXTEEN

Pressure of more important affairs prevented our giving ourselves the customary pat on the back last month, as we started the sixteenth year for SOUTHWESTERN MEDICINE. The editorial office is allowed this self congratulation, usually the only commendation of any sort received during the year. We receive plenty of bricks, but no flowers, so that we may be excused if we take the bricks and erect a playhouse out of them.

The medical profession in the southwest has been in the doldrums during the past year, but that is no occasion for allowing our medical craft to deteriorate. A ship in the doldrums will have all hands at work, painting, scraping, mending, and getting ready for the fair wind. This is a time when we should put our best foot foremost; when we should have the best possible annual meetings; when we should take postgraduate work; when we should read and study; when we should, in every possible way, prepare to do the best work we are capable of in the future. If we have fewer patients, we should give each of them the benefit of additional time and study, of more carefully taken histories, of more exhaustive examinations, of more personally directed treatment. Thus will we find ourselves well in advance of our time, when fair winds come again. So far as we have observed, this is the spirit of the medical profession in the southwest. At least, those who possess this spirit and exercise it NOW, are going to be the leaders of medical thought and activity five years hence.

## ARIZONA STATE BOARD OF MEDICAL EXAMINERS

The Secretary of the Board, Dr. B. M. Berger, reports that, at the January, 1932,

meeting of the Board, two applicants were licensed by examination and three by reciprocity, as follows:

DR. D. J. LYONS, graduate of St. Louis University in 1930, was licensed by examination; he is located at Yuma, Ariz.

DR. JOHN W. PENNINGTON, graduate of University of Iowa in 1929, was licensed by examination; he is located in Phoenix, practicing urology in association with Dr. David M. Davis, office in the Professional Building.

DR. TREVOR G. BROWNE, graduate of McGill University in 1922, was licensed by reciprocity with Michigan. He is located in Phoenix, offices in the Professional Building, where he practices pediatrics.

DR. WINFRED L. REID, graduate of Northwestern University in 1924, licensed by reciprocity with Mississippi. He is located in the Professional Building, associated with Dr. Orville H. Brown, practicing surgery.

DR. WARREN S. BALDWIN, graduate of Vanderbilt University in 1892, licensed by reciprocity with Oklahoma; he is located at Mayer, Ariz.

Dr. Berger also announces the appointment of DR. WILLIAM G. SHULTZ of Tucson, as a member of the Board, to succeed Dr. A. L. Gustetter of Nogales.

# WILLIAM CLYDE ELLIS W. H. ANDERSON J. O. HATCHER G. S. LABEN E. B. SHAW

The Medical and Surgical Association of the Southwest have lost several valuable and esteemed members by death during the past year. The Association feels the loss of these men very keenly. Their pioneer work in the southwest stands as an inspiration to the younger members of the profession and has done much to elevate the standard of medical practice in their communities:

Dr. William Clyde Ellis, Phoenix, Ariz., died July 1st, 1931. Dr. Ellis was born at Portsmouth, Ohio. He received his early education in the schools at that place. He was a graduate of the Medical College of Ohio at Cincinnati in the class of 1899. He practiced medicine in Ohio for several years, but in 1907 for climatic reasons he removed to Phoenix, where he acquired an extensive practice, and became one of the better known physicians of the state. He was active in advancing the welfare of the city and valley, and served a term as a city commissioner. He erected the Ellis and Physicians' Buildings, besides other down-town property. He is survived by his wife and a daughter. Dr. Ellis died of carcinoma of the larynx.

Dr. W. H. Anderson, of El Paso, was a prominent physician of that city for many years. His most outstanding work was done in the role of public health officer and it was under his administration that many strides in the supervision of community health were made. His was the chief influence responsible for obtaining certified milk in the community. He died of heart disease at the age of sixty.

Dr. J. O. Hatcher, of Deming, New Mexico, was a very high type of general practitioner and a great loss to the community. A peculiar circumstance in his death is that grandfather, father and son all died at the age of 52. He is survived by his wife and two children.

Dr. G. S. Laben, of Sacaton Indian Reservation, Arizona, was in the government service. He was a faithful attendant of medical meetings and his familiar face will be greatly missed.

Dr. E. B. SHAW, of Las Vegas, N. M., was known as an active and successful medical man whose long experience in practice did not dull his interest in the progress of the profession. Dr. Brown speaks of his surprising vitality and vigor when he last saw him at the New Mexico State Society meeting in 1930 at which time he was nearly eighty years old.

Be it resolved that the sympathy of the Association be extended to the families of the deceased. Be it further resolved that a copy be sent to the members of their families and that this resolution be spread upon the minutes of the society.

HOWELL RANDOLPH, RALPH HOMAN, W. A. GEKLER,

Committee on Necrology.

#### RADIOSENSITIVE TUMORS

(Continued from page 85)

lewing chart, grading from the most sensitive to the least sensitive.

Sensitivity of Normal Tissues.

White Blood Cells	2.5	
Germinal Cells of Ovary and Testis	2.25	
Blood Forming Organs, spleen and marrow	2.	
Endocrines, thyrcid, adrenal, pituitary	1.8 to	1.6
Blcod Vessel Intima	1.5	
Hair Folilele	1.4	
SKIN,	1.	
Serous Membranes	.9	
Intestines	.8	
Liver and Pancreas	.7	
Uterus and Kidney	.6	
Fibrous Tissue	.5	
Muscle	.4	
Bone	.3	
Nerve Tissue	.2	
Fat	.1	

It will immediately be apparent why we can get such prompt effect on the white blood cells and on the germinal cells of ovary or testis without injuring the skin, or why we can destroy an angioma beneath the skin by producing an obliterating endarteritis through effect on the blood vessel intima, and, on the other hand, why it is so difficult to get effect on an osteogenic sarcoma without injuring the skin.

Eargonie and Tribondeau, about 1915, formulated the law that radiosensitivity is in direct ratio to the rapidity of cell growth and the approach to the embryonal type of cell. This law still holds, though we have gradually come to recognize the place which various other factors play in sensitivity. Some of these can be briefly mentioned:

Age of patient has an influence; cells are more sensitive in the child and become less sensitive with

increasing age.

Blocd supply; anemia decreases the sensitivity while engorgement increases it; a hyperemic skin will stand only half the radiation dose that a blanched skin will stand.

Temperature; heat increases the sensitivity and celd decreases it, this probably being due to the dif-

ference in vascularity.

Structure; the more cellular the structure the more sensitive it is. Actively dividing cells or those with active metabolism are decidedly more sensitive than those in a resting stage; cells with secretory function are particularly sensitive in the stage of metabolic activity.

Systemic disease; syphilis increases cell sensitivity. Anything which diminishes the resistance of the cell makes it more sensitive to radiation. Chemicals increase the effect of radiation, particularly

inorganic compounds.

Fer abnormal growths, the general physiology of the cell of origin determines the sensitivity of the

growth to a large extent.

Coming to abnormal tissues, such as tumors, we find that the radiosensitivity is in proportion to the rapidity of metabolism and of growth, with due regard for the cells of origin. The reasons for the sensitivity are briefly (1) cells are more vulnerable when the nuclei are in mitoses, (2) the cell is more embryonal in type when multiplying rapidly, (3) the unstable vascularity and poorly distributed nourishment, (4) cells are anaplastic, without developed function.

The classification of tumors according to sensi-

tivity would be about as follows:

Most Susceptible: Lymphomas, lymphosarcoma, leukemia, Hodgkin's thymic tumors, myeloma.

Very Suscoptible: Embryonal tumors and cellular anaplastic tumors, such as carcinoma of testis or

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ovary, carcinoma of breast, stomach, esophagus and araplastic sarcomas.

Susceptib'e: Basal cell carcinoma.

Resistant: Adenocarcinoma and adenoma; desmo-

plastic tumors like squamous carcinoma. Very Resistant: Fibreblastic sarcoma, osteosar-

coma, neurosarcoma, glioma.

The so-called grading of tumors is based on the degree of anaplasia and the approach to the embryonal type of cell. The higher the degree of anaplasia, which means the absence of functional differentiation of cells, the more sensitive they are to radiation. The rapidity of response to radiation follows more or less closely the sensitivity and is we'll borne out in these two cases. It is interesting to get a bird's eye view of the rate at which various Issioss respond to radiation treatment. Hirsch groups them into four classes.

#### RESPONSE IN ONE DAY TO ONE WEEK

Lymphosarcoma Leukemia Hodgkin's granuloma Mycosis fungoides Psoriasis (early) Eczema Lichen ruber Epidermophyton.

#### RESPONSE IN ONE TO TWO WEEKS

Round cell sarcoma Prostatic hypertrophy Tuberculous granuloma Tuberculosis of bone Fibroadenoma Lupus hypertrophicus Favus and Sycosis Acne vulgaris Verrucae juvenilis.

TWO TO THREE WEEKS

Epithelioma Carcinoma M lanosarcoma Angiosarcoma Acne vulgaris Lupus planus Goitre.

THREE OR MORE WEEKS

Keloid Fibrosarcoma Chondrosarcoma Fibroma Fibromyoma Osteosarcoma Osteoma Neuroma Verrucae.

In the case of the man with the mediastinal growth, the rapidity of response was quite spectacular, almost like a dose of adrenalin in asthma. In one week's time the large tumor shown which filled the entire mediastinum and pressed upon the trachea and great blocd vessels, had entirely disappeared. There is sufficient gradation in response of lymphosarcoma, Hodgkin's, tuberculous adenopathy and carcinomatous metastases in glands,—to radiation,—that the method can be used in differentiating. The response of this growth would throw it in the lymphesarcema group, though not differentiating it from leukemia.

In the girl, the tumor mass in the abdomen began to shrink after the second treatment, or within one week. The shadow in the left chest showed marked change within a four day period. This is almost enough to establish a diagnosis of lymphosarcoma also. To my mind, it would rule out hypernephroma.

DR. D. M. DAVIS questioned the accuracy of the conclusion that this could not have been a hyper"WHAT A PLEASANT WAY TO GET BACK MY STRENGTH, DOCTOR"



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nephroma because of the rapidity of change after radiation, citing a case where a similar tumor with lung metastases in a young girl had undergone a very similar rapid disappearance following radiation. Nephrectomy was then performed and the histologic findings proved conclusively that it was hypernephroma, the patient dving about nine months later from metastatic extensions. He did not think that one could depend on the respons to radiation in making differentiation between tumor growths. He also raised question as to the response of prostatic hypertrophy to radiation.

#### CASE DISCUSSION

(Continued from page 87)

symptoms. In perforating gastric or ducdenal ulcor we would expect sudden pain but it should be in the upper abdomen and there should be tenderness and marked rigidity, board-like rigidity of the upper abdomen, as well as previous history of gastric disturbance, although this is not always obtainable. In acute cholecystitis we would expect the signs and symptoms to be at least direct d toward the upper right quadrant as well as some previous hist ry of digestive or gall bladder symptoms. As to acute int s'inal obstruction, it is quite evident that this pat'ent had acute intestinal obstruction from the sudden ons t, from the lack of tenderness and distention at first and from the vomiting which continued and gradually became fecal a short time before death. This condition will be considered again later. In acute pancreatitis, the pain is in the upper abdom n, the condition does occur in the aged and it is an abdominal calamity accompanied with serious and severe symptoms and shock, and the pationt may die in a very short time. There is usually severe tenderness and rigidity from the first, with the signs and symptoms confined, at first at least, to the upper abdomen. In cases of acute pyelitis, the symptoms usually do not come on quite so suddenly and the signs and symptoms are directed toward one or the other of the two sids and toward the back. There should be chills and fever and tenderness in the lumbar region. Nothing is said about the urine in this case, so we take it that it was negative. Urinalysis would help in ruling out an acute pyelitis, as well as renal colic. Gastric crises can be ruled out as we have no history or blood picture or pain in the gastric region to make us think of such a condition. Acute abdominal allergy can probably be ruled out because of the severity of the case. It is possible that we should consider this condition and it is noted that acute food poisoning was considered and is mentioned but given up apparently. In this condition we get diffuse abdominal pain of a colicky nature with distention, nausea, and vomiting, and the pain is usually most marked in the lower abdomen. I suppose it would be possible to get edema enough with this condition, especially in a patient of this age, to start off an intussusception or volvulus which would explain the symptoms and signs. However, acute abdominal allergy is quite rare and I should not like to say that it was the cause in this case. Mesenteric thrombosis cannot be ruled out, and the age of the patient, the history, the hypertension, the anginal attacks, which in all probability were coronary sclerosis, point toward a condition of this nature.

In going over this case we cannot rule out intestinal obstruction and in fact we feel quite sure that the condition is one of acute intestinal obstruction. The cause of the obstruction, in the absence of a history of previous surg ry, or abdominal or pelvic inflammation of any kind, is not quite certain. However, in considering the age of the patient, the brief and scanty history, the mention of hypertension one would think of a mesent ric thrombosis as a cause of the obstruction. One should not forget, however, that in a patient of this age it is possible for an obscure and latent tumor of the intestinal tract to start off a volvulus or an intussusception. In considering a mesenteric thrombosis one would expect to get blood in the stool; but inasmuch as this patient had no stools after the first few at the beginning of the attack it is very possible that it would not be detected. As to the blood picture, a white count of 30,000 is in keeping with mesenteric thrombosis according to Graham. I am at a loss to explain the high red count unless it might be due to a decrease in the fluid content of the blood and this count a relative one.

After this brief consideration and discussion of the case I should like to venture a diagnosis of:

1. Acute intestinal obstruction due to mesenteric thrombosis probably due to arteriosclerosis of the superior mesenteric artery.

2. General arteriosclerosis with hypertension.

#### Discussion by Dr. Milloy

The question immediately presents itself in this case, as it does in all such cases in old people, where there is severe abdominal pain, to distinguish between the pain of coronary occlusion and the pain of true abdominal disease. In older people, any of the acute abdominal conditions are just about as liable to be atypical as they are typical. And in less typical cases the pain of coronary occlusion is very often referred to the abdomen. Here we have a history of anginal attacks, a severe pain located in the abdomen which is not relieved by morphine. a sudden marked fall in blood pressure, a leukocytosis. These are pathognomonic symptoms of coro-

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nary occlusion with cardiac infarction. And this is exactly the type of patient in whom you would expect a coronary occlusion, having a hypertension, which, at the ag of 74, practically means arteriosclerosis. However, by late afternoon she began to develop abdominal distention and by the following morning the case was decidedly one of abdominal disease, as all the chest symptoms had subsided. The gradually increasing abdominal tenderness and marked abdominal distention, the leukocyte count of 30,000, along with the symptoms of shock, such as cyanosis, rapid shallow breathing, marked fall in blood pressure, rapidly increasing pulse, and finally feeal vomiting, mean general peritonitis, or intestinal obstruction.

The history is not very suggestive of an obstruction. Obstruction is not liable to be preceded by loose bowel movements, and it is unlikely that she would have 30,000 leukocyte count so soon. And, while she vomited at the very start, she did not vomit again until near death, at which time it really was fecal vomiting. It is much more likely that she developed general peritonitis from rupture of some hollow viscus. The most common things to suspect would be ruptured appendix or ruptured peptic ulcer. The less common things to suspect would be a ruptured gangrenous gall bladder, rupture of an intestinal ulcer, e.g., an amebic ulcer or an ulcer of ulcerative colitis. There is absence of any history to suggest either gall bladder or ulcer, and besides pain was in the lower abdomen. A sudden severe pain in the abdomen with symptoms of shock and prostration, is exactly what happens when a peptic ulcer ruptures. It is not likely that such a leukocytosis would develop so rapidly, but of course it could produce a general peritonitis which, of course, would cause a high leukocyte count. D'arrhea, or loosa bowel movements, frequently pre-

cedes appendicitis. She may have had some indigustion and taken a laxative. One of the best things to precipitate a severe case of appendicitis is a strong physic. Here is a woman who developed sudden pain in the lower abdomen and vomited; she also has a high leukocyte count. The most likely thing is acute appendicitis. Desver says the com-monest cause of belly ache is appendicitis. It is not unusual in old people to have acute appendicitis, and to have no pain or tenderness over McBurney's point. She probably had no pain until the appendix ruptured and still did not have tenderness until the peritonitis developed. There is no way to diagnose stuptured intestinal ulcers unless we have a history of the primary cause of the ulcer.
Diagnosis: Appendicitis, ruptured, and general

peritonitis.

#### Autopsy Findings Pathologic Discussion

Mitral stenosis.

Arteriosclerosis of the aorta and the great vessels. Slight arteriosclerosis of the coronary arteries.

Hypertrophy of the heart.

Embelism and thrombosis of the superior mesen-

teric artery.

Dr. Merrill J. King: At autopsy this patient was found to have a moderately enlarged heart with definite mitral disease. The mitral orifice was practically occluded, and there were old healed vegetations on the leaflets. Both cusps were sclerosed and calcified. In the postrior cusps about 7 millimeters from the free margin there was an irregular narrow, eroded, slit-like area of destruction forming an opening about one centimeter long and from two to four millim ters in width. The edges of this perforation were finely nodular. There were two small finely granular areas on the auricular surface of the right anterior cusp. There was slight

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#### SIXTEENTH ANNUAL CLINICAL SESSION

## AMERICAN COLLEGE OF PHYSICIANS

April 4-8, 1932 San Francisco, Calif.



Outline of Session

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
	April 4	April 5	April 6	April 7	April 8
9:00 A. M. to 12:00 M	Morning free. Registration, exhibits, etc.	1st Clinical Session	2nd Clinical Session	3rd Clinical Session	4th Clinical Session
12:00 M to 2:00 P. M.	Luncheon	Luncheon	Luncheon	Luncheon	Luncheon
2:00 P. M. to 5:30 P. M.	1st General Session	3rd General Session	5th General Session	6th General Session Annual	7th General Session
5:30 P. M. to 8:00 P. M.	Dinner	Dinner	Dinner	Business Meeting	Dinner
8:00 P. M. to 10:30 P. M.	2nd General Session	4th General Session	Convocation and Reception to New Members	ANNUAL BANQUET	" '49 Party"

A POSTGRADUATE WEEK IN INTERNAL MEDICINE AND ASSOCIATED SPECIALTIES, covering a wide range of subjects presented by outstanding men in medicine not only from the west coast, but from all parts of the country. About half of the program will be devoted to actual clinics, laboratory demonstrations, ward walks and exhibits. In addition, there will be complete displays of medical literature, pharmaceutical products, equipment, appliances, special foods, etc.

Transportation—Railroad fares will be reduced to one and one-half times the one-way fare for the return trip. A "certificate of identification" must be secured from the Executive Secretary of the College to entitle physicians and members of their immediate families to these reduced fares.

San Francisco Headquarters—Palace Hotel, New Montgomery and Market Streets.

Post-Convention Tour—Following the San Francisco Session, a special train has been engaged for a tour of the Southwest, including the Yosemite Valley, southern California (with a two-day program of pleasure and inspection around and in Los Angeles), the Grand Canyon of Arizona, etc. Special itinerary and rates sent upon request. Los Angeles head-quarters will be the Los Angeles Biltmore Hotel.

INVITATION extended to all qualified physicians. Non-members of the College will pay a nominal registration fee.

Address inquiries and requests for programs to the Executive Secretary.

S. Marx White, M. D., President Minneapolis, Minn.

Wm. J. Kerr, M. D., General Chairman San Francisco, Calif. sclerosis of the coronaries and aorta, with a large calcified plaque in the arch.

The next most interesting findings were in the superior mesenteric artery, where at the origin of the first large branch supplying the jejunum there was a small firm dark red blood clot 1.5 centimeters in length resting against the angle formed by the bifurcation of the vessel. This mass was slightly adherent to the vessel wall and practically occluded the lumina of both the main vessel and the branch. Practically all of the jejunum and portions of the ileum and the ascending colon were dark red and distended and were beginning to undergo infarction. There was about 400 cubic centimeters of serosanguineous fluid in the peritoneal cavity, with fresh fibrinous adhesions between contiguous loops of gut.

The liver was negative. The kidneys showed ar-

teriosclerotic changes.

Dr. William D. Smith: There are two or three rather interesting things about this case. When I saw the patient the morning after she came in it was perfectly obvious that she had some abdominal tragedy, that is perforation, peritonitis or thrombosis. The diagnosis we made of thrombosis of course was guesswork. At her age, with her heart and the tremendous suddenness of the thing it seemed to me the best probability. It happened to be right; but there might perfectly well have been some other abdominal condition.

Another interesting thing was the drop of 100 points in blood pressure in spite of the shock. The heart rate was about 100 and the sounds were fairly good. That seemed a little queer with the lungs full of rales. Even so when we listened to her heart it was a pretty good heart. Why she did not have a

1ate of 160 I cannot imagine.

The question of cononary thrombosis was brought up on admission. I do not know why she might not have had coronary thrombosis. I have seen the pain of coronary thrombosis maximum in the back, I have seen it maximum in the neck and teeth and I have seen it imitate gall bladder very closely; but I have never seen the pain of coronary thrombosis

in the lower abdomen.

She was seventy-four years old and had a practically occluded mitral valve and no one raised the slightest question of mitral stenosis. There was no history of congestive failure, the heart was not fibrillating, there was no murmur suggestive of mitral stenosis. Once in a while you see an old person with no past history of rheumatism who has definite mitral stenosis, and you wonder if a person can have mitral stenosis from an unknown rheumatic infection in childhood, get to be seventy-five or eighty years old with no heart symptoms, then die suddenly and show practical occlusion of the mitral valve. I have always wondered whether there might not be arteriosclerotic mitral stenosis just as there is arteriosclerotic aortic stenosis.

Dr. Edward L. Young, Jr.: Surgically I do not think there is anything to add. This case is of the type in which surgery offers nothing. As a matter of fact the surgical mortality in mesenteric thrombosis is very high anyway. The only figures I know put it at 94 per cent. In a person of this general type that does not leave any loophole at all. That scemed to be perfectly obvious when I saw her. We did not see any way of making a diagnosis between mesenteric thrombosis or embolus and perforation with peritonitis. The background of heart disease and arteriosclerosis made the other the first choice. I do not know—perhaps Dr. Richardson can tell—whether any case has been operated upon successfully in this hospital. I heard Dr. Balch speak of one in which he and Dr. Porter took out about four feet of intestine with success. The one or two cases I have done have not been successful.

Medically I do not know that the mortality is any better. It is an interesting fact, however, that there have been reported one or two cases of autopsy with more or less complete occlusion of mesenteric vessels yet the patient not dying from that condition. Those are cases of slow onset, not this

clinical type of sudden onset.

Dr. Smith: I have wondered whether people ever have minor mesenteric thrombosis and get over it. I remember one patient who had cerebral embolus, emboli in both lower extremities and then suddenly had an attack of intense abdominal pain. We decided she had mesenteric embolus with thrombosis. Then she proceeded to get over it. The diagnosis of course was up in the air. I do not think she had gall bladder disease. She had had three emboli al-

ready.

Dr. Edward P. Richardson: I know that the mortality is very high in mesenteric embolism and thrombosis. One case recovered after extensive resection between 1908 and 1918. I cannot say since then. But at any rate, with any extensive lesion the only chance is resection of the affected intestine. I should say it is possible to have embolism to such a limited extent that it might not permanently interfere with the circulation of the bowel. One of the striking things in these cases is the leukocyte count, which is often higher than is present in infection. Another source of difficulty is that interference with bowel circulation is sometimes due to embolism and sometimes to thrombosis. In embolism there is ordinarily quite clear-cut demonstrable pain. In thrombosis there is often a very indefinite history, and the condition may be found at autopsy when quite unsuspected.

## CASE DISCUSSION (An Acute Abdomen in Child)

F. C. JORDAN, M. D. HOWELL RANDOLPH, M. D. Phoenix, Arizona

(Case 11053, Case Records of Massachusetts General Hospital, from Boston M. & S. Jour., Jan. 29, 1925, page 229).

#### Case History

A six-year-old schoolgirl came to the Emergency Ward September 10. She had had sore throat, fever, frequency and pain in the right side for the past few days.

F. H. Good.

P. H. She was born at full term, normal delivery, and weighed only about four pounds at birth. She was breast fed until one year old, grew well and developed normally. She had measles, mumps, chickenpox and whooping cough between two and four years without serious complications. The winter before admission she had a swollen, red and tender kneejoint for two weeks and was thought to have rheumatic fever.

P. I. September 5 she complained of sore throat and was feverish and restless. The following night she vomited greenish-yellow fluid several times and complained of epigastric pain. September 6 she felt better, but could not retain food or fluid taken by mouth. September 7 she complained of the pain's being in the right side. September 9 she was so tender that she did not want to be lifted out of bed. Her bowels, which usually tended to be constipated, moved well September 9 after a cathartic. Since the onset she had urinated almost every hour by day and frequently at night. There had been no scalding.

P. E. A fairly well developed and nourished child looking rather ill, but mentally alert and cooperative. Face pinched. Eyes slightly sunken. Conjunctivae injected. Head negative. Cervical glands slightly enlarged. Chest long and narrow. Lungs and heart normal except for rapid heart action. Abdomen full and tympanitic. Slight tenderness on deep pressure over right lower quadrant. Marked tenderness over the right costovertebral area. Less tenderness in the right flank. Spasm not marked. Extremities, pupils and reflexes normal. Genitals not recorded.

Temp. 99 to 104, pulse 110 to 150. Before operation R. 20-36, amount of urine not recorded, sp. gr. 1.006-1.012, neutral at two of five examinations, no albumin or sugar (a catheter specimen was taken); blood, hgb. 100%, leucocytes 15,000-23,400, polynuclears 84%, reds normal. X-ray negative. First surgical consultant: (1) Spasm most intense in costovertebral region. (2) Rectal examination negative. (3) Temperature 105°. This suggests kidney rather than appendix. Ssecond surgical consultant: Probable pyelitis. Genito-urinary consultant: "The tenderness is definite to-night (September 12). It seems confined to the right upper quadrant and the right side of the abdomen and is most definite in the costovertebral angle. . . . Recommend operation."

September 13 there was less tenderness in the costovertebral angle but much in the right flank; no

spasm or tenderness over the appendix.

September 15 operation was done. Seven hours after it the temperature suddenly rose to 104.6°, the pulse to 170, and the respirations to 50. There was generalized tendernes and spasm over the abdomen. The chest was clear. The next day the patient appeared much worse. Subpectoral saline 1000 c.c. was given in the morning and at night. Shortly after midnight the child died.

Discussion by Dr. Jordan

I believe we can say that we have one of three

things: (1) appendicitis with a retrocecal abscess; (2) a subphrenic abscess; (3) abscess within or around the right kidney. What evidences have we for or against these diagnoses?

Can we eliminate appendicitis? Appendicitis is not rare in a child at the age of six and is usually diagnosed after the appendix is ruptured and there is localized or general peritonitis. The child had some pain and tenderness in the right side, a fever and a leukocytosis of 15,000 to 23,000. The lungs were normal although no x-ray pictures were taken. These are the typical findings of an appendicitis except that you would expect more tenderness and rigidity in the right side. Against the diagnosis of appendicitis, there was a fever of 104 and 105. Such high temperatures are uncommon in appendicitis. Rectal examination also was negative and, in appendicitis, you would expect quite a marked tenderness in the right side on rectal examination; then such a marked tenderness and spasm over the right costovertebral area would not be expected in appendicitis.

How about a subphrenic abscess? This could account for all the signs present. X-ray of the piaphragm on the right side will often determine the absence or presence of the most important sign of the subphrenic abscess. The diaphragm is usually raised and the liver pushed down. Yet, without this evidence, we cannot rule out a subphrenic abscess either secondary to a perinephritic abscess or to an

appendicitis.

What evidences have we for or against a pyelonephritis or a perinephritic abscess? One consultant thought that the condition was probably due to a pyelitis. Pyelitis is a term used to designate a mild degree of renal infection. Pyelonephritis is a more extreme grade of infection. This certainly was not

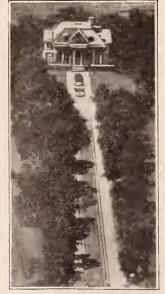
#### THE ROBINSON CLINIC

Melancholia is a common condition found in adults of all ages. The chief symptom is a feeling of unworthiness and lack of desire to continue with the struggles and problems of life. Women, at the menopaus, frequently resurrect some overtact committed early in life and dwell upon this, until it is magnified into an unpardonable sin. They have delusions that other members of their family are being punished for this sin.

Younger adults are seldom affected with the above formed delusions, but have just as great a sense of their own unworthiness, but can seldom give such a clear and lucid account as to the cause.

All forms of melancholias and depressions must be guarded closely against suicide. Their own statements must not be given credence, because their mental reactions change so quickly, they may deny any thought of self-destruction one minute, and the next, be carefully planning to take their own life. Homes and hospitals offer so many opportunities for suicide, we believe the only safe place for these unfortunates is in a hospital with special equipment to handle these cases, and with carefully trained and watchful attendants; they must be constantly supervised.

Treatment consists of removing the cause, in addition to the above supervision. Careful examinations must be done, to determine the cause. Gland extracts, sedatives, hydrotherapy and psycho-therapy and specific treatment produce the best results.



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Internist

a mild infection and, if the kidney was involved, it was more than a pyelitis. Pyelitis is much more frequent in females. About 85 per cent of the cases are female. The increased frequency mentioned was probably due to an accompanying cystitis. Hemholtz has produced primary lesions in the renal pelvis of rabbits by the intravenous injections of staphylococcus and streptococcus, but was unable to to produce these lesions with the colon bacillus. Nelson and Schloss believe that there is an acute inflammatory process of the interstitial tissues of the kidney in the cases that are usually determined to be pyelitis. The colon bacillus is found in about 85 per cent of the cases, staphylococcus in 10 per cent and streptococcus and bacillus proteus in 5 per cent of the cases. Infections due to cocci require radical measures, as nephrectomy. Colon infections are not nearly so likely to be fatal and should be treated conservatively. The colon bacilli have a predilection for the renal pelvis and do not give rise to suppuration. The pyogenic group show a predilection for the renal cortex and the lesions consist of perinephritic abscess, cortical abscess and diffuse suppuration. Hunt's review of 106 cases in Mayo's Clinic of perinephritic abscesses, found that 44.3 per cent were due to primary renal disease, pyelonephrosis, lithiasis, tuberculosis, etc., and 55.7 per cent occurred in clinical absence of apparent or demonstrable or primary renal lesions. Also, that a large percentage are metastatic from some previous infection like carbuncle, tonsillitis and wound infection. Only one of these cases was bilateral. would seem that we have all the clinical signs of a perinephritic abscess in this case. There was a high temperature, a marked leukocytosis, a tenderness in the right costovertebral angle, a history of a previous perinephritic abscess. The prognosis in in subphrenic abscesses is usually grave.

Our diagnosis in this case is: first, perinephritic abscess: second, subphrenic abscess. I do not see how we can rule out either of these diagnoses.

#### Discussion by Dr. Randolph

The case under consideration is one in which sepsis is unquestionably the outstanding thing and the location of the central focus of infection is the unsolved problem. The possible diagnoses are perinephritic abscess, subphrenic abscess, pyelitis, appendicitis, liver abscess, hepatitis, pancreatitis or a combination of two or more of these conditions. The onset with sore throat and fever would indicate that the abdominal condition was due to metastatic infection from diseased lymphoid tissue in the throat. Any one of the above conditions might result, with the tonsils as the portal of entry. The second day of the disease she could not retain food but did not complain of pain until the third day. The extreme tenderness of the right abdomen and costovertebral angle on the fifth day would indicate rapidly increasing tension in a suppurative process. Frequency of urination since the onset calls attention to the urinary tract, although there was no "scalding" and no pus cells were reported in the urine. Suppurative process in the kidney itself can be present without pus being present in the urine.

Practically all the symptoms and signs are consistent with appendiceal abscess. A small percentage of appendix abscesses point posteriorly forming psoas abscess. A large number result in subphrenic abscess. Pyelitis is ruled out by the absence of urinary findings. With a hepatitis we might expect a more prolonged illness with more evidence of dysfunction of the liver. A localized liver abscess, however, might very well cause this clinical picture. Pain in the back radiating upward would be suggestive. We would expect pain in the back also with a diffuse pancreatitis which also would be apt to

run a more chronic course. It seems to me that the diagnosis lies between appendiceal abscess with developing subphrenic extension and perinephritic abscess.

Perinephritic abscess is the result of a primary pyelitis frequently extending through to the perirenal fat capsule. It is not unusual for hematogenous infection to select this site for abscess formation. The course of the disease is usually longer, there is apt to be more superficial tenderness over the costovertebral area and lumbar fixation from associated spasm of iliopsoas and regional muscles is very common. The operation that was performed might well be expected to have brought the temperature down if perinephritic abscess were the correct diagnosis.

Of considerable importance is the finding of abdominal distention, and tympanitis. I am inclined to place much emphasis upon this point together with the initial fairly high temperature with a subsequent drop and after a day or two another rise. This, and the rapidity with which the disease progressed, suggests a general peritonitis. Increasing tenderness in the right upper quadrant was noted two days after admission. No mention is made of the type of respiration although there is some respiratory embarrassment. It is not stated whether sharp pain was caused by deep breathing or whether there was bulging of the lower intercostal spaces.

Diagnosis: Acute appendicitis, general peritonitis, subphrenic abscess.

## Operative Record PRE-OPERATIVE DIAGNOSIS

Perinephric abscess.
 Appendix abscess.

Ether. Before operation the patient had a rapid pulse, but the abdomen remained soft and peritonitis was thought not to exist. Through a right loin incision carried down though the muscles the fascial layers and the intramuscular spaces were found to be edematous as in perinephritis. perirenal fat was edematous, but the kidney was normal. After this exploration was made it was found that an abscess apparently within the abdomen lay in contact with the lower pole of the kidney. The peritoneum was opened without exposing the abdominal cavity. A mass of adhesions seemed to have effectively walled off the abscess cavity from the peritoneum. On opening through the peritoneum about two drams of thick pus was evacuated from an appendix abscess about one inch in diameter. Rubber wicks and rubber tube drains were placed in the cavity, but no attempt was made to find or remove the appendix. The patient was in fair condition at the end of operation.

#### Post Mortem Findings

1. Primary fatal lesions.

Gangrenous appendix, abscess and general peri-

Dr. Richardson: The abdomen was slightly distended, the wall a little rigid. The peritoneal cavity contained much thin purulent fluid. The peritoneum generally was coated with fibrinopurulent exudate. The proximal half of the appendix showed edema of the wall, but it was free and the mucosa negative. The distal half was closed off in the region of its proximal portion, and in the situation there was a mass of purulent infiltrated adhesions which walled about an abscess cavity containing dirty reddish fibrinopurulent material in the midst of which rested the necrotic remains of the distal half of the appendix. The retroperitoneal tissues, in the region extending up to and involving to some extent the perirenal tissues in the region of the lower pole of the right kidney, showed purulent in-

filtration. On the right posterolateral aspect of the mass there was purulent infiltration and necrosis to which the operation wound led down. Purulent infiltrated adhesions also extended to the lower end of the ileum. The periton um in the region was coated with exudate.

The small intestine was slightly distended and contained much dirty reddish opaque fluid material.

The mes nteric and retroperitoneal glands were slightly enlarged and reddened. The liver was at the costal border in the right mammillary line. The diaphragm was at the third space on the right, the fourth rib on the l ft.

In each pleural cavity there was about 100 c.c. of cloudy fluid and fibrin. The pleura over the lower lobes showed a slight fibrinous coating.

The thymus gland was present, weighed 8 grams,

and was negative.

Th lung tissue generally was pale red, spongy, and vielded a moderate amount of reddish frothy tluid. In the region of the lower lobes there were a few scattered areas of hemorrhagic edema.

#### REVIEW

The maginficent rise of medical and dental thoughts and its release from the inhibitions placed upon it by medieval religion and bigotry, to the freedom of thought characteristic of the modern era has received, during the past year, considerable publicity in a form calculated to reach an extremely large number of persons. Interest in this subject, for doctors not already familiar with it, will lie in the relation of radio to the professions; in the passibilities of radio as a medium for acquainting the public more thoroughly with the aims and achievements of medicine and dentistry.

For the period of a year, the Columbia Broad-casting System has carried over a chain of approximately 40 radio stations a series of weekly talks by Howard W. Haggard, M. D., associate professor of applied physiology at Yale University. The title of the series was fixed with a view to attracting the laity: "Devils, Drugs, and Doctors." The material was prepared by Dr. Haggard in a popular style, with the average level of the public in mind. The talks were ethical and dignified at all times.

The material of the series was historical at times, explanatory at times, analytical at other times. Whatever the approach of each weekly talk, the effect. especially the cumulative effect of hearing the talks week after week, can not but have given the radio public greater sympathy with the professions and greater understanding of their achievements, their objectives, their methods.

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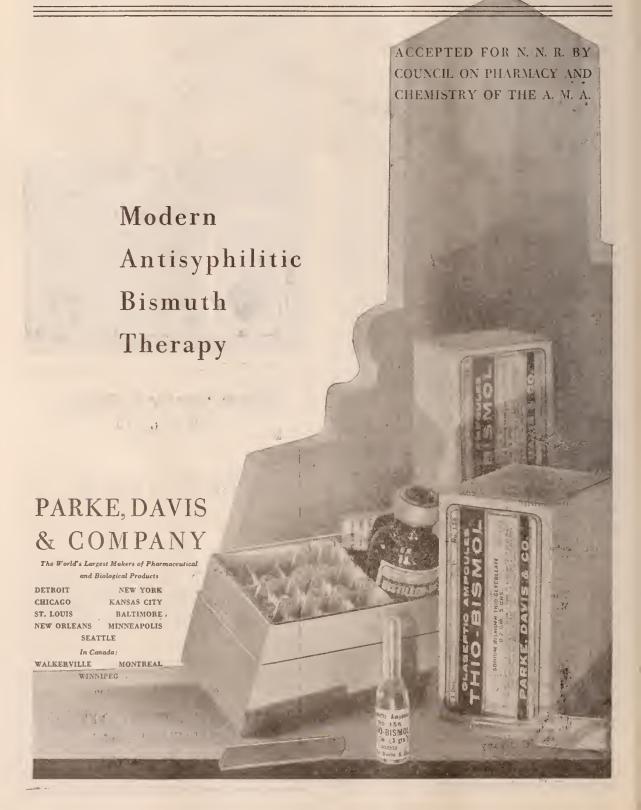
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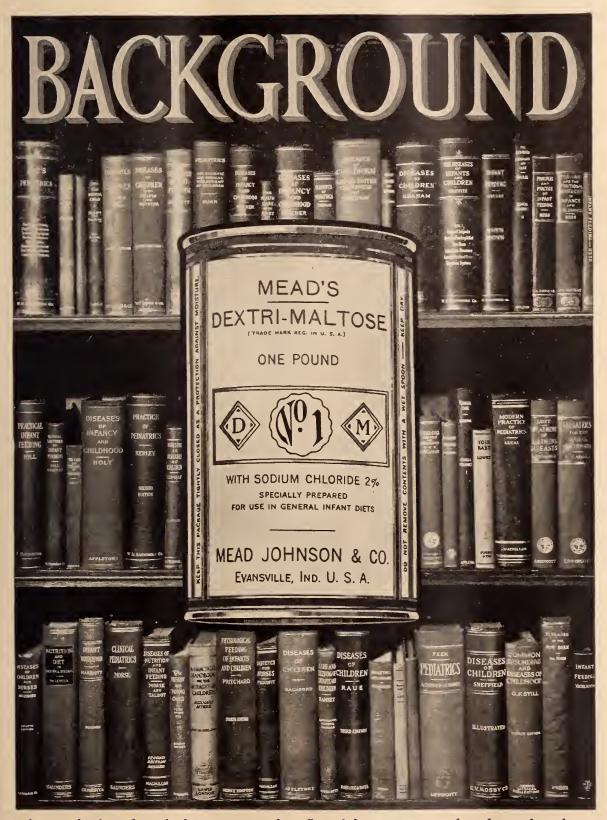
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Volume XIV

March, 1932

No. 3

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# THE OPERATIVE MORTALITY AND THE SEQUELAE JUSTIFY OPERATIONS ON BORDERLAND GALLBLADDER CASES?

W. L. BROWN, M. D., C. P. BROWN. M. D., and J. L. MURPHY, M. D. El Paso, Texas

(Read before the Seventeenth Annual Meeting of the Medical and Surgical Association of the Southwest, at Phoenix, Ariz., Dec. 3-5, 1931).

It is not our intention to discuss frank, acute cholecystitis, accompanied by fever, rain, and acute tenderness in the region of the gallbladder. Neither is it our intention to discuss the type of cholecystitis occurring during, or following, attacks of gallstone We wish to discuss a group accompanied by more or less indefinite symptoms, with moderate tenderness and indefinite pain in the region of the gallbladder, usually occurring in women of neurotic temperament though occasionally we see the same symptoms and have the same experience with men. This group and the group with definite acute cho'ecystitis and gallstones, in recent years have been included under the title of "gallbladder disease".

Why one should say "gallbladder disease", when one doesn't say stomach disease, or appendix disease, or intestinal disease, we do not know; it is a very popular term, is very vague, and is of far reaching significance.

There seems to be no very definite agreement as to any particular symptom complex upon which might be based a diagnosis of "gallbladder disease", aside from gallstones, or definite cholecystitis accompanied by fever. Mixson' mentions approximately ninety-six different symptoms which are indicative of "gallbladder disease".

We are being advised that these patients should be operated upon very early, and that, if they are not improved after operation, it is because they were not operated upon sufficiently early. It is stated that, because of this neglect, these patients acquire hepatitis,

cholangitis, pancreatitis, heart disease, rheumatism and all the other manifestations of metastatic focal infection. We are inclined to believe there has been built up around this ambiguous term, a lot of unproved theories that are now considered by some as facts. Some of the most experienced surgeons state frankly that they often operate for so-called "gallbladder disease", and, with the gall-Lladder exposed, find that it looks entirely normal and feels entirely normal but they go ahead and remove it. Sad to state, many of these ratients are not relieved of the symptoms that caused them to consult the surgeon. They are then told that the operation was not done early enough, and that they had cholangitis, pancreatitis, hepatitis, ard so forth. Much of this unproved pathology has been built up by the surgeon himself, by stating at the time of the operation that there was hepatitis, cholangitis and rancreatitis, without any definite proof whatsoever. Those who have accepted this so-called pathology have naturally been led to believe that it was all due to "gallbladder disease", and for that reason operation should have been done very early and before irreparab'e damage had taken place. We must confess that we have been unable to cu'tivate a sufficient tactile or optical sense, to say, off-hand, that there were present these various diseases attributed to the gallbladder. The constant repetition of this dogma has caused it to be accepted as real and serious pathology.

We are led to believe, from much of the current literature written by the gallbladder enthusiasts, that it is only neccessary to operate and operate early. They never suggest that there is any mortality following operation, or any failure, to make the existence of the patient and surgeon miserable for years afterwards.

It must be remembered that cholecystectomy has a mortality of from 5 to 7 per cent in the cities of one hundred thousand or less.

Of course, in the large clinics, they have a much smaller percentage of the acute cases; consequently they have a much lower mortality rate. The mortality rate for all operators in the city of El Paso, for five years, including 1930, was 7.3 per cent. Records of some individual operators were considerably less, but we have to deal with the general average. Unfortunately, the patient in one of these borderland cases, who walks into the hospital laughing and joking, often makes his or her contribution to this mortality.

One recent writer went so far as to say, out of eighteen hundred routine cases he had examined, six hundred of them, or one-third, were suffering from "gallbladder disease", and, as he believes in early operation, it would mean one out of every three would become a surgical case.

Since the x-ray entered the diagnostic field of "gallb'adder diseases", a so-called "atonic gallbladder" has added one more sign to those indicative of "gallbladder disease", and by many this is taken seriously as being a very definite indication for operation. So-called atonic gallbladder symptoms may be due to other atonic organs, such as the stomach or colon. We are not advocating operation for atonic stomach or atonic colon very often.

Dr. Judd states that "there seems to be some difference of opinion as to the standards adopted in making x-ray diagnosis of atonic gallbladder. Many of these gall-bladders are found, at operation, to be microscopically normal and without cystic duct obstruction". He further states that it must be constantly borne in mind that the test conducted by the x-ray and onaque dves is a functional test, and that a gallbladder that is fairly normal histologically may be disturbed functionally. He also states that, in his experience, it has seemed that we were not justified in basing surgical procedures on the gallbladder entirely on the functional disturbance.

It has been stated that 5 per cent of all cancers occur in the gallbladder; that most of these cases have gallstones, and for that reason, if they have definite evidence of gallstones, the gall-bladder should be removed to prevent the possibility of cancer. If we accept this statement that 5 per cent of all cancers occur in the gallbladder—which seems rather high,—that would be one death in every one hundred thousand, while five to seven deaths in every one hundred would occur from operation to prevent it. This, of course, is only another evidence of enthusiasm for gallbladder surgery.

We are told that gallstones are the results of neglected cholecystitis, and that we should never wait until that late stage of the disease before operating. On the other hand, in many cases of gallstone operations, we find the gallbladder normal. It is also true that patients upon whom we have operated for gallstones, on the average, have had a much more satisfactory postoperative history than those upon whom we operated for so-called chronic cholecystitis.

The students of food allergy have now come along and, out of this human heap of surgical failures, have found that a great many of these people continue to have the pain and other symptoms exactly as before the operation, because they are food allergy cases. We hope that from now on we will find this out before the operation instead of finding it out after the operation.

The history of so-called "gallbladder disease" in neurotic women is about as follows:

A great many have had abdominal operations before, often appendix or some pelvic operation, attacks of moderate pain in region of gall-bladder, accompanied by much gas and often soreness—pain doesn't usually require hypodermics and they are not jaundiced; usually they are very nervous, have a lump in the stomach, can't eat various things because they cause gas, and they are frequently nauseated, but at no definite time. They will have much belching after eating, and are usually constipated.

Gas is usually the outstanding symptom. The patients do not have a history of definite acute pain accompanied by extreme soreness and fever, such as they would have in acute cholecystitis. Many of them have found certain articles of diet that increase their misery. They are never sick enough to have to stay in bed or lose any time from their duties.

We find, now, that a good many of these cases have been having hay-fever, asthma, hives, and so forth. Two of our recent cases have passed blood from the bowels during these attacks. X-ray report is usually "atonic gallbladder without stone shadows". Examination of material secured by medical gallbladder drainage is often of importance in the differential diagnosis. These patients are very persistent about having something done, and ultimately secure an operation. Examination at the time of operation is often very disappointing as far as pathology is concerned.

#### CONCLUSIONS

1. We have a feeling that clinicians in the past few years have built up around the gall-bladder an exaggerated pathology that in

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reality does not exist. We are aware of the associated pathology in other organs of the body when there is a chronic infectious focus, but we do not believe the associated pathology in so-called chronic "gallbladder disease" warrants early operation. Nor do we believe it explains our failure to relieve the "gall-bladder disease syndrome" after the removal of an apparently innocent gall-bladder for the same.

- 2. Furthermore, experience has led us to believe that there is a certain class of hypersensitive or allergy cases, having the "gallbladder disease syndrome" that cannot be relieved by cholecystectomy. A careful history in these cases often reveals hay-fever, asthma, urticaria and certain forms of the purpuras.
- 3. In considering the mortality rate from cholecystectomy and the number of cases not relieved by the procedure, whether they are due to allergy or other causes not yet clearly understood, we believe surgeons generally are over anxious in their indications for early removal of the gallbladder for a syndrome as yet vaguely understood.

#### REFERENCES

1. Mixson, H. J., Gallbladder Disease, Texas State Journal of Medicine, September, 1931.

2. Judd, E. S., Surgery of Biliary Tract, Mayo Clinic, Vol. 21, 1929.

## FUNGUS INFECTION WITH SPECIAL REFERENCE TO THE LUNGS

W. WARNER WATKINS, M. D., F. A. C. P. Pathological Laboratory Phoenix, Arizona

(Read before the Thirty Eighth Annual Session of the Arizona State Medical Association, held in Prescott. Ariz.. April 18-20, 1929; before the New Mexico Medical Society, annual meeting in Taos, N. M., May, 1929; before the Radiological Society of North America, in Toronto, Can., November, 1929.)

Fungi are even more generously distributed through Nature than are their close kin. —the hacteria,—and they very frequently infect the human tissues, even to the point of acute fatal invasion, as in blastomycetic septicemia. Yet, in spite of these well known facts, mention of fungus infection, aside from certain familiar skin diseases, brings only the idea of strange and unusual clinical pictures. For many years, Mendelson<sup>2</sup>, and others, have been insisting that internal infection by the larger vegetable organisms (higher fungi) is vastly more common than the clinician realizes. For example. Sanford and Voelker', in 1925, gathered reports on 670 cases of actinomycosis. more than half of which had not previously been recorded in the literature.

This sketchy presentation is intended to give a brief review of the general classification of fungi, following Castellani, and then a short discussion of the clinical types of pulmonary infection with such organisms. The general classification is mentioned in order to emphasize the biologic relation of the fungi, not only to the higher plants but, of more importance, their close kinship to certain bacterial groups.

VEGETABLE KINGDOM

Spermatophyta,—seed plants Pteridophya,—ferns. Bryophyta,—mosses Thallophyta,

Algae,—thallophyta with chlorophyl.
Fungi,—thallophyta without chlorophyl.
Schizomycetes,—fungi which reproduce
by fission.

Mycetes,—unicellular or pluricellular plants which reproduce by sporulation.

Myxomycetes,—multinuclear naked protoplasm.

Eumycetes,—usually filamentous thallus.

Fungi belong to a subdivision of the thallophyta, or plants with a reproductive portion distinct from the vegetative portion. Of the thallophyta, the class of algae have chlorophyl and obtain their oxygen from the air, while the fungi do not have chlorophyl and must, therefore, obtain oxygen from the material in which they grow. There are two classes of fungi: the schizomycetes or bacteria which multiply by fission, and the mycetes which reproduce by sporulation. The subclass of eumycetes, distinguished by having, as a rule, a filamentous thallus, contain all the fungi which are parasitic to man. The eumycetes are divided into four classes. three of which contain the parasitic forms. Before passing to these, it is well that we briefly define a few more or less familiar terms, so they will recur to us readily.

Thallus refers to the vegetative part of the fungus.

Hypha is an individual filament of the thal'us. A hypha is usually a cylindrical tube containing protoplasm; it is usually divided at intervals by partitions called septa; hyphae may be of various shapes, long and thin, short and thick, straight or curved. In the bacilliform fungi, the single rod would be both hypha and thallus. In branched forms, the parent stem is thallus, the branches being hyphae.

Mycelium is a collection of hyphae.

Spores are the specialized cells by which fungi reproduces. Conidia are exospores or freeborn spores. Gonodia are endospores, either born in a specialized sac called an ascus, or by a more complicated process. Tygospores are spores formed by union of two identical cells called gametes. Oospores are spores resulting from the union of two sexually differentiated cells.

The four classes of eumycetes are the following, only the first three containing parasitic forms:-

I. Hyphomycetes, or fungi imperfecti. Mycelium, when present, is septate; reproduction is by freeborn spores (conidia).

II. Ascomycetes. Reproduction by spores contained in asci (ascospores).

III. Phycomycetes. Mycelium not septate; reproduction by zygospores.

IV. Basidiomycetes.

The large chart presented herewith gives the different orders, families and genera of the three classes of eumycetes, which contain all fungi parasitic to man. This is an appreviated copy of Castellani's classification. There will be found here many familiar names, such as the fungi causing ringworm, thrush and other familiar external lesions. There are other names which should become familiar to us. It is increasingly evident that fungus infection is not rare and is usually incorrectly diagnosed. The reason for failure to recognize such infections is their close similarity to tuberculosis, syphilis and other granulomata. The confusion is not helped by the favorable response of many mycoses to potassium iodide, thus misleading the clinician into a diagnosis of syphilis, because of a supposedly positive therapeutic test.

Infection by a mycete is known as a mycosis. Bronchomycosis is the general term for infection of the bronchi and lungs by fungi. Bronchomycoses are not nearly so rare as commonly supposed. There are numerous references in the foreign literature to mycoses of the respiratory tract, but American writers are not lacking in recognition of the growing importance of this subject. In addition to the voluminous writings of Castellani, we find in a somewhat cursory reviey of current medical journals many references to bronchomycoses:

Steinfeld found monilia, endomyces and cryptococcus (blastomyces) in mild and chronic asthmatic bronchitis.

Stokes and McCleary report cases of asperigillus infection of the respiratory tract with autopsy findings.

Lapham writes on the association of aspergillosis with tuberculosis and believes that this form of fungus infection is fairly common. She states that the lesions cannot be distinguished from tuberculosis and that double infection is serious.

Foerster' gives a very excellent resume of sporothricosis and states that lung infection does occur. Forbus' and Singer' report cases of pulmonary sporothricosis.

Other articles, elsewhere referred to in this paper, are those of Wilhemj<sup>11</sup>, Philibert and Cordey<sup>12</sup>, Turner<sup>13</sup>, Mendelson<sup>2</sup>, Hamman<sup>11</sup>, Christison and Warwick<sup>16</sup>.

Bronchomycoses may be due to a variety of fungi and a formidable nomenclature has grown up, enough to discourage the casual reader. Castellani gives a simplified grouping for clinical purposes, but even that is rather difficult to hold in mind, and there is given below a classification which is easy to remember and which will, we hope, encourage the search for and recognition of these fairly common respiratory infections.

- 1. Bronchomycoses due to filamentous fungi. (This will include all fungi of the order of microsiphonales, such as actinomyces, cohnistreptothrix, vibriothrix, cladothrix, leptothrix and anaeromyces). Bronchonocardiasis.
- 2. Bronchomycoses due to the yeastlike fungi. (This will include the hyphomycetes such as blastomyces, torula, monilia, oidium and oospora, as well as the ascomycetes such as saccharomyces, willia, endomyces and coccidiodes). Bronchothallosporosis.

3. Bronchomycoses due to fungi of more complex form. (This will include aspergillus, penicillium, acremoniella, mucor, rhizomucor, lichtheimia, sporotrichum, acladium).

It is admitted at once that this modified classification into three groups does violence to the purely biological grouping. However, our aim is to make a simpler classification of more practical value to the clinician, without too much hair-splitting over distinctions in nomenclature. Pneumonia is pneumonia to the physician, whether produced by type one, two, three or four pneumococcus, and only when treatment is to be guided by the information is it essential to know the type of organism. If we do not wish to remember the term "bronchonocardiasis", we can at least bear in mind that there is a group of fungi, filamentous in structure and closely akin to the tubercle bacillus, producing almost identical clinical pictures; this is manifestly simpler than to attempt to draw fine distinctions between broncho-actinomycosis and broncho-anaeromycosis, and so forth. The term "broncho-thallosporosis" we have not seen used before, but certainly it is simpler to include under this name all infections produced by the thallospores (blastomyces, torula, oospora, monilia, oidium), whose clinical courses are indistinguishable, than to attempt to remember the biologically correct term for each infection. It is admittedly taking more liberty to include under this term the ascomycetes (such as saccharomyces, willia, endomyces and coccidiodes), but so long as the clinical pictures are so nearly

<sup>\*</sup>Omitted in error; to be printed next month.

alike, it should be granted to the clinician, who is more inclined to be practical than accurate, to have a comprehensive term for a practical grouping. If the practitioner will go so far as to suspect and eventually to diagnose the presence of a fungus infection, that is all that can reasonably be expected of him, and the finer distinctions can be left to the high powered clinical pathologist or bacteriologist. There is sufficient variation in clinical courses to warrant the separation of the three groups mentioned above.

#### GROUP 1. BRONCHONOCARDIASIS

Mycoses caused by filamentous fungi of the microsiphonales order. Several fungi belong to this order and it is usually surprising to the clinician to realize the very close kinship between them (the nocardia) and tubercle bacilli. Nocardia is the term now recorgnized for actinomyces and streptothrix, probably the fungi most commonly found in mycotic lung infections. The anaeromyces are intermediate between the mycobacteria (tubercle bacilli) and the nocardia. Being members of the same family, it is not at all surprising that infections of the lungs by these fungi should usually be diagnosed tuberculosis. This close similarity to tuberculosis is the distinguishing characteristic of this group of fungus infections, and this similarity should be anticipated from the biological kinship. When we recall that some of these bacilliform fungi are acid fast to the carbol fuchsin stain we do not wonder that most of the cases are mistakenly diagnosed tuberculosis.

We have had occasion to observe two patients who presented the extremes of involvement in this group. One of these had undoubtedly had the infection more than twenty years, with advanced changes in left lung, pleura and chest wall. There were numerous discharging sinuses and purulent expectoration. Both the pus from the sinuses and the sputum showed granules with nocardia. This patient (ref. Dr. Fred G. Holmes) had been operated upon several times in eastern clinics for what was supposed to be tuberculous lesions in the ribs. After correct diagnosis, treatment with massive doses of iodides and radiation was given, with healing of all the sinuses and almost complete cessation of expectoration. other case was a mild chronic bronchitis with asthmatic symptoms, the case reported by Turner. Organisms were found in the sputum and cultured, proving to be nocardia. This patient (ref. Dr. George Goodrich) entirely recovered under iodides and radiation, and has remained well.

GROUP 2. BRONCHOTHALLOSPOROSIS

As previously mentioned, to include all the yeast infections of the lungs in the same group, takes liberty with a purely biologic classification, but since the whole yeast-like group cause very similar, if not clinically identical, lesions and symptoms, we hope to win the approval of the practitioners at least, even though the meticulous bacteriologist will scorn such a grouping. The yeast-like fungi are prone to systemic distribution, thus marking off a distinct clinical characteristic from the filamentous fungi which tend to localized lesions. Blastomycosis is the best known of the infections under this head. Wilhemin quotes Stober to the effect that the respiratory tract is the atrium of infection in systemic blastomycosis, although Castellani states that pulmonary invasion is usually secondary to the skin involvement. Wilhemj cites thirty-three cases confirmed by autopsy in which the lungs were involved in thirty and twenty began with pulmonary involvement.

In addition to blastomycosis, the torula, monilia, saccharomyces and coccidiodes usually cause either general systemic disease or multiple widely separated lesions.

We have observed at least three cases in this group. One came to us for roentgen examination for suspected tuberculous spine complicating what was thought to be an advanced pulmonary tuberculosis. Bone lesion was in the crest of ilium and was unlike tuberculosis. Incision of the abscess gave pus containing blastomyces, and further investigation of the lung condition showed this to be blastomycosis also; diagnosis was later confirmed by autopsy. The second case was sent for x-ray examination of what was supposed to be tuberculosis of the elbow, in which we concurred. Amputation was done some weeks later and laboratory examination of tissue showed coccidioidal infection; this patient died from pulmonary involvement which autopsy showed to be of the same type. The third case started as an acute broncho-pneumonia which did not subside, and tuberculosis was suspected. Sputum was consistently loaded with yeastlike organisms, which culture proved to be monilia. Patient finally developed a hip joint infection which seemed to negative the diagnosis as we could find no reference in literature to monilia infection in bone. However, in conversation with Castellani, he stated that he has twice seen joint and bone infection by monilia and that the course of this case would not be inconsistent with moniliasis.

Monilia, endomyces, oidia, willia, saccharomyces all cause lesions clinically indistinguishable from those mentioned, although coccidioides are more likely to invade bone and the blastomyces to spread generally through the body.

#### GROUP 3. COMPLEX FUNGI

Infections by aspergillus, penicillium and the hyphomycete,—acremoniella,—are clinically identical. Lapham concludes from her observations that many cases of asthmatic bronchitis or asthmatic symptoms in tuberculosis are due to aspergillus infection, which can be either primary or secondary to tuberculosis. Infection by mucor, sporotrichum and acladium are much less frequent than those mentioned above, but are occassionally met with. Cutaneous sporothricosis is now known to be fairly common, closely resembling skin tuberculosis or syphilis. Recent writers have described pulmonary lesions.

#### DIAGNOSIS

The literature on mycoses of the lungs has little to hold the interest of the general practitioner. Writers, instead of endeavoring to c<sup>1</sup>arify the clinical picture, center their attention upon describing some unusual organism, and if it does not conform exactly to an established form, a new name is coined and reported with great gusto. On the other hand, there is nothing distinctive about mycotic infection of the lungs. Hamman' very concisely summarizes the situation when he states that mycotic lung disease presents no characteristic clinical picture, but masquerades in the likeness of a number of wellknown pulmonary infections. While it may simulate any of the subacute or chronic bronchial or lung diseases, it is most often mistaken for tuberculosis. Actinomycosis (nocardiasis) of the lungs is the most common bronchomycosis, and Christison and Warwick15 give the chief diagnostic points between it and tuberculosis as follows:

#### Actinomycosis

Lower lobes first affected.
Lymph nodes never involved.
Pain a common symptom.
Cavity formation rare.
Spreads by continuity.
Sinuses in chest wall frequent.
Abscess formation frequent.
Often spreads through diaphragm.
Fungi in sputum.

#### Tuberculosis

Apices first affected.
Lymph nodes usually involved.
Pain a rare symptom.
Cavity formation frequent.
Often metastasizes through blood.
No involvement of chest wall.
No abscess formation.
Rarely spreads through diaphragm.
Tubercle bacilli in sputum.

Pulmonary symptoms may vary, regard-

less of the infecting organism, from those of a chronic bronchitis extending over years, with few physical signs, no characteristic x-ray findings and little interference with general health, to a rapidly advancing, destructive process in the lungs, with purulent or bloody sputum, anemia, emaciation, hectic fever and death. Fungus infection should be suspected whenever the pulmonary disease does not easily fit into any accepted diagnosis, and systematic search should be made for the organisms in the sputum. The ease with which organisms are found will vary somewhat with the kind of infection. Sputum may show small granules containing mycelial filaments in actinomycosis, or thin, bacillary fi'aments may be found. In case of streptothricosis, these hyphae may be acid-fast and resemble tubercle bacilli. If they are the anaeromyces they will resemble the diphtheroid bacillus, though branching forms will usually be found, gram positive and strictly anaerobic.

The yeastlike fungi are more difficult to find and it is essential, especially with the monilia, to examine the sputum when perfectly fresh. It may be necessary to use cultural methods either to detect the organisms or to prove their type.

Having found a fungus in sputum, this does not establish the diagnosis, since such organisms may be present in one of three caracities (Hamman):-

1. As a saphrophyte in the secretions, having nothing to do with the infection.

2. As a secondary invader upon a tuberculous or other infection, in which event it may profoundly alter the course of events.

3. As the primary and sole infecting agent. Stovall and Greeley report 58 cases where fungi were found in sputum, but in only 18 of these were they able to establish rositively that the fungi were the primary infecting agents. The entire resources of clinical judgment and laboratory facilities may be required before a correct conclusion can be reached.

#### TREATMENT

Having established that infection of the lungs by a fungus is present, what is the treatment? Most cases will be benefited by large doses of potassium iodide; some will not. Several of the types appear to be amenable to radiation by x-ray, and this is the recognized treatment for infection with nocardia. The two measures may be given simultaneously. Philibert and Cordey report a case of lung infection resembling broncho-pneumonia for several months and then in milder form for five years. It finally

proved to be infection by saccharomyces and recovered under treatment with iodides and methylene blue after proving refractory to iodides alone. Steinfeld treated fifteen cases of yeastlike infection by killed autogenous cultures in conjunction with iodides, with good results.

It will immediately become apparent from these few words about treatment, that the treatment of fungus infection is quite different from that of tuberculosis, and that therefore diagnosis becomes of prime importance.

#### SUMMARY

- 1. Suspect fungus infection of the lungs when symptoms of tuberculosis exist and tubercle bacilli cannot be found.
- 2. Hunt carefully, diligently and repeatedly for some type of fungus in fresh specimens of sputum.
- 3. Do not be greatly concerned about the particular type of fungus, except for the satisfaction of scientific accuracy. The classification of the type of infection, aside from the simple grouping mentioned, is of little clinical value.
- 4. Filamentous fungi will probably mean a localized lesion; if in the lungs, infection will remain in that region, spreading slowly by contiguity.
- 5. Yeastlike fungi will probably be found scattered throughout the body.

#### REFERENCES

- Castellani, Mil. Surg., 57: 113, Aug., 1925.
   Jour. Trop. Med., July, 1925.
   Am. Rev. Tuberc., Nov., 1927.
   Arch. Der. & Syph., Oct., Nov., Dec., 1927.
   Jan., Feb., Mch., 1928.
   Med. Clin. N. A., March, 1928.
- 2. Mendelson, S. west Med., Feb., 1928.
- 3. Sanford and Voelker, Arch. Surg., Dec., 1925, p. 809.
- 4. Castellani. Fungi and Fungous Diseases, 1928.
- 5. Steinfeld, J. A. M. A., 82: 83, Jan. 12, 1924.
- 6. Stokes and McCleary; Bost. M. & S. Jour., Jan. 1928, p. 1350.
  - 7. Japham; Am. Rev. Tuberc.,
  - 8. Foerster; Am. J. Med. Sci., Jan., 1924.
  - 9. Forbus; Am. Rev. Tuberc., Nov., 1927.
  - 10. Singer; ibid., Oct., 1928.
- 11. Wilhemj; Am. Jour. Med. Sci., May, 1925, p. 712.
- 12. Philibert and Cordey; ab. J. A. M. A., 84: 235. Jan. 17, 1925.
  - 13. Turner; Radiology, July, 1926.
  - 14. Hamman; Am. Rev. Tuberc., Nov., 1927.
- 15. Christison and Warwick; J. A. M. A., 89: 1043. Sept. 24, 1927.
- 16. Stovall and Greeley; J. A. M. A., 91: 1346, Nov. 3, 1928.

## EXTRAPLEURAL PNEUMOLYSIS (Preliminary Report of Cases)

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In the treatment of pulmonary tuberculosis, we have had for many years, as recently reiterated by Flinn in the Arizona State Medical Society, a specific: namely, rest, in proper dosage. We have no other specific. All of the other attempts at treatment are based on this principle. The method of Forlanini, with its later aid of intrapleural pneumolysis; the various forms of phrenic nerve interruption; thoracoplasty, are all a logical development of this idea.

It is interesting to note that the idea of localized rest allowed by extrapleural pneumolysis was conceived early in the methods of surgical rest of the lung. Tuffier is frequently credited with advancing this idea forty years ago. However, as early as 1885, Truc1 performed a partial plastic, "seeking retraction of a cavity that had previously been opened." De Cerenville resected the fifth rib in order to obtain retraction of an underlying cavity. Others performed local plastics for similar purposes. The idea of Tuffier<sup>3</sup> embraced compression of an apical cavity by resection of an overlying rib and separation of the parietal pleura from the thoracic wall, following which a mass of fat was placed in the extrapleural space. The wound was then closed. Since this time, numerous attempts to improve on the method have been made. It has been used chiefly for the compression of apical cavities, and various approaches—anteriorly, posteriorly, and above the clavicle—have been used. The original fat packing of Tuffier has been replaced by a great many substances, including omental tissue, breast in women, fibroid, paraffin, a mixture of vaseline wax, and pedicle grafts of the pectoralis muscles.

Extrapleural packing with iodoform or other gauze or compresses, changed every few days, have been used. Likewise, rubber bags which could be inserted into the extrapleural space, after freeing of the pleura, and then inflated and kept in this state until some fibrosis of the pleural tissues in their new position could be secured. Freeman' of Denver reported favorable results by apical compression after extrapleural section of the second and third ribs anteriorly and application of a truss.

There has been gradual loss of confidence in fat and other tissues as a means of securing permanent compression in an extraplural space after pneumolysis. The consistency of fat and other transplanted tissues is not maintained. Even the pedicled muscle grafts undergo some degree of atrophy and contraction associated with scarring, thus allowing

some decrease in size of the filled space and allowing expansion of the compressed cavity. In my opinion, there is a serious objection to extrapleural packing with gauze or rubber bag or any substance which does not remain permanently in the chest, because of the fact that a localized pocket of extrapleural infection can scarcely be avoided, and other procedures are necessary to clear up this infected space. Thearle' reported twelve pneumolyses comprising one pectoral-muscle filling and eleven gauze-tampon fillings, from which he concluded, after a year's observation, that they were not completely effective because of partial cavity expansion following scar contraction, as the large extrapleural space slowly filled with granulation tissue.

However, through the years, paraffin has come to be more highly regarded than any other substance for this procedure, particularly among the Germans and Austrians, and now also among the French. I presume the persistence of Sauerbruck in its use is very largely responsible for its present revival. Following Sauerbruck, von Walzel and Neumann, in Vienna, have, in the past three years, used it in 150 cases with favorable results. The paraffin employed is a mixture which can be sterilized and placed while soft in the extrapleural cavity, where it remains in solid state at body temperature or ordinary fever temperatures.

Study of autopsied cases has shown that a high degree of fibrosis in the pleural and intrathoracic tissues occurs adjacent to the mass of paraffin as a result of foreign-body irritation. Frequent mention is made in the older literature of the danger of the paraffin being extruded as a result of this reaction and resulting infection. However, in my experience, this seldom occurs. It is too early to say that it may not happen later, but the only case in which I have had extrusion of paraffin is one in which I am confident that infection of the extrapleural space occurred from the wound. I believe it can be avoided by absolute asepsis both at operation and until accurate skin union of the wound has occurred. A change in this country in favor of the use of paraffin as an extrapleural packing, is occurring.

Indications for this type of operation are definite. Let me first repeat here that a thorough trial of rest should be given in every case. If ineffective, pneumothorax should be tried. If these fail, extrapleural pneumolysis may be considered in the following types of case: (1) Localized cavitation in the upper lobe or apex of one lung, with good lung below and on the other side. (2) A case with upper lobe or apical cavitation, with good lung below, but with involvement in the other lung which is of doubtful prog-

nosis. (3) Cases with bilateral localized apical cavity. (4) Cases which are not, but may eventually become, suitable for thoracoplasty. (5) It is also of value in cases in which posterior thoracoplasty has failed to obliterate large cavities.

In favor of the election of extrapleural pneumolysis as a primary surgical collapsing procedure, I would urge, in addition to the probability of saving good lung tissue, the fact that this operation, which may be done under local or block or gas anesthetic, is of much less shock to the patient than any stage of a thoracoplasty, unless this be section of perhaps three ribs in a patient able to withstand section of five or six at one stage. I would say that the majority of my nine cases have not experienced even first-degree shock.

As regards pneumolysis as a procedure supplementary to thoracoplasty, it again represents less shock than an anterior costectomy. This is contrary to the opinion of Welles' published in 1927. He did not state whether he had given much trial to pneumolysis. In the two cases in which I have performed anterior costectomy following posterior thoracoplasty, I feel that better results would have been secured by extrapleural pneumolysis with paraffin filling.

Extrapleural pneumolysis has been carried out through resection of the second or second and third ribs posteriorly near the spine, opening large enough to admit one or two fingers being made. This method was used recently by von Walzel in a large series of cases. The anterior approach above and below the clavicle has been used. Eloesser has recently used the anterior approach, cutting the pectoralis muscle and entering the second interspace without resection of rib. our series of cases, with one exception, incision has been made just behind the anterior axillary fold, the muscles retracted and section of the second or third rib made. The intercostal muscles and periosteum, at closure, are sewn tightly together. In one case, the second intercostal space was entered without section of a rib, but in the majority of cases, in our experience, the spaces at this point are too narrow to admit of sufficient entry of the finger into the chest to complete the pneumolysis.

Local anesthetics and, in some cases, ethylene-gas anesthetic have been used.

I have, in all, treated nine cases\* with this procedure and I will run through them briefly showing, in six of them, film findings before and after operation. Of the other three cases I will show, two bear out an objection to this procedure which is voiced in the literature and which I would uphold to some extent. In these two cases, the cavity wall

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was, at one point, as thin as cardboard, and rupture into the cavity was done at operation. In one of these cases, I have since perperformed effective upper stage thoracoplasty. The other case was a young doctor whose condition was so grave that no other procedure seemed conceivable. The fortunate result in his case has been almost perfect cavity drainage and marked general clinical improvement, such that thoracoplasty can now be performed. Despite the favorable outcome, these two cases show the necessity of careful scrutiny of the x-ray appearance of cavity walls before attempting this procedure. The thickness can often be observed to some degree.

The third case is one in which bleeding from the pleura after freeing was evidently not thoroughly stopped before packing. On the day after operation, a massive subcutaneous ecchymosis of the whole right chest and flank occurred. Fearing infection, I made a small drainage opening in the incision and, in this way, I am sure, caused the infection which I had feared. The ecchymosis cleared naturally, but, during the next three months, the paraffin largely sloughed out. Fortunately this patient evidently formed sufficient fibrosis and fixation of tissues about the collapsed cavity so that his sputum and cough have not as yet, after five months, recurred. Further plastic has, of course, been recommended in this case following his general improvement.

The first of the six cases I will now show is a girl of twenty-seven who had been under bed rest for a year and one-half. Her original examination showed bilateral advanced tuberculosis, with large cavity in the right apex and small cavity in the middle third of the left lung. Since extrapleural pneumolysis, she has had reduction of sputum from two ounces to one or a little less, but her sputum remains positive. We believe the left lung is chiefly responsible for her present cough.

The second case showed, three years before operation, a marked bilateral process which, shortly before operation, had improved very much on the left side, but had totally excavated on the right. The post-operative film shows a shadow which is, in part, we believe, due to extrapleural effusion, which often occurs in these cases. There has been no ill effect from this effusion, which is absorbing.

Third case was considered after a period of bed rest and attempted pneumothorax for thoracoplasty, but a small tuberculous atelectatic area of the opposite lung made us hesitate. After reexpansion of the partially collapsed lung, operation was done. This case also showed some effusion.

The next patient was forty years old. After four years medical observation he persisted in cough and expectoration and occasional exacerbations, despite general improvement. Six weeks after operation, he now shows very scant daily expectoration and general improvement.

The next patient, thirty years old, had been in bed for one year, during which a small cavity in his left lung had very much decreased but a very large cavity remained in the apex of the right lung. He was not considered a good risk for thoracoplasty. His temperature dropped to normal after operation and his sputum, from two ounces or more, to less than one-half ounce, in a month.

The last of the six is a woman twenty-six years old who had been through the mill and who still had cavitation after thoracoplasty. The remnant of her cavities was so close to mediastinum that anterior costectomy would not cure her. Probably the one paraffin filling we performed has not; but she is very markedly improved. Some basal left-sided densities have remained practically stationary since she was first seen in June, 1930.

Figures reported in 1930 by Doumont and Rougy, which they had attempted to collect from Hungarian and Austrian sources, gave the following results in extrapleural pneumolysis with paraffin fillings: 36 per cent results excellent, 28 per cent benefited definitely, 36 per cent ineffective. These were taken about six months after operation. In this present series, we must include two attempted cases where cavity rupture occurred and no paraffin packing was actually used, and these were ineffective for the purpose of this article. With these two exceptions, we consider that all cases have been improved by the procedure, and four have shown marked improvement. As the first case done is only seven months old and the last one month, it is too soon to draw final conclusions. However, at present, we would say the percentage is: ineffective (2 cases ruptured) 22 per cent, markedly improved 44 per cent, less improved 33 per cent,—which is comparable to the above statistics. With better and earlier selection of cases, we feel these results may be improved.

#### REFERENCES

1, 2. Cited by Sayago, Am. Rev. Tuberc. 15:544-63, May, 1927.

3. Cited by F. Dumarest et P. Rongy—Press. Med., Feb. 8, 1930, p. 201-3.

Freeman, L. Ann. Surg. 50; 145-50; 1909.
 Thearle, Wm. H. Am. Rer. Tuberc. 14: 69-79,

1926.
6. Welles, E. S. Arch. Surg. 14:384-88, Jan., 1927.

7. Paper not yet published.

\* Three other cases have been completed since reading of this paper.

#### CURRENT MEDICAL PROBLEMS OF CENTRAL AMERICA, WITH SPECIAL REFERENCE TO THE TREATMENT OF AMEBIASIS.\*

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(Read before the San Francisco County Medical Society on November 3, 1931.)

During the late summer of 1931, we observed at first hand many things of medical interest in the American tropics. We were sent to Panama primarily to study the effect of Carbarsone in amebiasis. While in Central America, however, we were fortunate in being able to visit Guatemala City and San Jose de Costa Rica. In Panama City our work consisted of protozoological studies in the Gorgas Memorial Laboratory and treatment of those patients in the Hospital Santo Tomas who were infected with pathogenic amebae.

The first foreign port we touched was Mazatlan in Mexico, a town of about 30,000. Here one is impressed by a filthy public market place, with meat and other foods exposed to dogs, flies, and meddling fingers. Naked pot-bellied children and bare-footed peons are seen everywhere. We were told by the port medical officer that tuberculosis, malaria, and gastro-enteric disease are the major medical problems. The water supply is contaminated and unfit for human use. Rats are so plentiful that it is necessary to keep a boa constrictor in the best hotel as a "house cat."

Going from Champerico into the interior of Guatemala through swampy lowlands, one sees on all sides bare-footed, poorly nourished natives of small stature. Hookworm and/or ascaris infection are universal, but efforts are being made by Dr. Daniel Molloy, of the Rockefeller Foundation, to carry out mass treatment in the field. Single gram doses of hexylresorcinol are effective clearing 90 per cent of the hookworm infestations, and in ascariasis about 65 per cent respond favorably. On reaching the coffee belt, at an altitude of 2,000 to 4,000 feet we pass through a region heavily infested with Onchocerca. Except for a small area in Chiapas and Oaxaca in Mexico, this disease is confined to a strip running north and south through the coffee lands of Gautemala. Thus far, efforts of control have been useless, largely due to the habits of the fly

\*Observations made during the late summer of 1931 while engaged in a field study of the chemotherapy of amebiasis, supported in part by Eli Lilly and Co., Indianapolis, the Panama Mail Steamship Co., San Francisco, and the University of California.

\*\*From the Pharmacological Laboratory and the Pacific Institute of Tropical Medicine, Hooper Foundation for Medical Research, San Francisco.

vector, Simulium. Eradication of the fly is impossible because the insects breed on the under surface of leaves and foliage along streams in the heavily wooded jungle. No treatment except surgical removal of tumor masses has been developed. The most disabling feature is the blindness produced by the Onchocerca when invasion of the cornea occurs.

In the capital, Guatemala City, of 116,000 people, 5,000 feet above the sea, there is a large American Colony. We were told that from one to three members of every American household were infected with Endameba histolytica. Dysentery is one of their serious problems, certainly. The water supply is not fit for drinking and there is no effort made to control food handlers, or otherwise to help reduce this high amebic incidence.

Continuing down the west coast of Central America, we touch several small ports of minor importance. The cleanest and most progressive of these is Puntarenas in Costa Rica. Throughout this country, one is struck by the high quality of native stock, the industry of the people, and the beauty of the country, in general. The capital, San Jose de Costa Rica, is about 75 miles in from the Pacific, at an altitude of 3,900 feet, with a population of about 56,000. Here we find an 800-bed hospital run by Catholic sisters. ard supported by a government tax. Before the advent of emetine therapy, dysentery was the chief cause of death in this city, and liver abscesses were common. Now all cases are given emetine at the onset of symptoms and every village throughout the country has a local health officer equipped with a syringe and emetine. Treatment is continued only as long as acute symptoms persist, however, and there is no attempt made to clear patients entirely of their amebae. Consequently, a high morbidity continues, but tuberculosis has replaced amebiasis as the principle cause of death. Typhoid is endemic and cutaneous leishmaniasis is frequently seen. The South American variety, with involvement of the nasal mucous membranes and destruction of the cartilaginous portions of the nose, is not found here.

Dropping down to Port Limon on the Atlantic side, we had an opportunity to visit a 200-bed hospital of the United Fruit Company. This medical unit of four physicians, four graduate nurses, and two sanitary workers, cares for approximately 12,000 people in the field. In spite of vigorous antimosquito measures, prophylactic quinine and plasmoquin therapy, they have a high incidence of subtertian malaria. At higher altitudes the tertian strain predominates and

is the only one of importance in San Jose. Previous to April of this year, the malaria rate was reduced to 40 per 1,000 in the Limon division, but at this time a large section of jungle was cleared for banana planting. This work required introduction of labor from Nicaragua and Panama. mediate increase in the malaria rate to 232 was noted, with serious outbreaks of blackwater fever, typhoid, and amebic dysentery. When we were there in September, the situation was under control, but there were still five cases of typhoid in the hospital, 70 to 80 per cent of the patients had malaria, and we saw one case of blackwater fever in an Old-World Spaniard.

Recently it has been suggested by Thonnard-Neumann, Moya, and Brewster' of Santa Marta, Colombia, that the pigment dystrophies of pinta (carate) are due to a derangement of the vegetative nervous system, giving a bilateral symmetrical distribution of the lesions. But in the group of 75 cases reported, they note positive serology in 90 per cent and clinical evidence of lues in a majority of the patients. Dr. E. I. Salisbury, at Limon, demonstrated two cases to us and apparently feels that the observations of the Colombian workers are correct. This is a radical departure from the current belief that the etiological agent in pinta is a fungus.

Our principal interests, however, were in Panama. In the Canal Zone one is impressed by the successful war waged against tropical disease since the construction days. The last important problem is the ever-present difficulty of malaria control. Since 1906 the maiaria rate for employees of the Canal Zone has been reduced from 821 to about 15 cases per 1,000. Today, except for malaria, tropical diseases are no longer of importance in the sannated areas. Ineumonia, syphilis, and tuberculosis are the three chief causes of death, and maiaria, venereal disease, and influenza cause the largest number of admissions to Government hospitals. It is interesting to note that the mortality rate for the Zone in 1928 was lower than that of any large city in the United States for that year.

Included in the controlled areas at the termini of the Canal, are the Panamanian towns of Panama City, with an estimated population of 70,000, and Colon, with about 35,000 people. The American public health service supervises garbage disposal, mosquito and fly control, growing of green vegetables, pasteurization of milk, and the water supply for these cities. Water from Gatun Lake is aerated, treated with alum, sedimented, passed through gravity sand filters.

and finally chlorinated. This water is piped to every house in the Zone, in Panama City, and in Colon. No other source of supply is permitted. In spite of this rigid control, it is noteworthy that diarrhea and enteritis rank third in mortality statistics, while tuberculosis and pneumonia place first and second in Panama City and Colon. The death rate for Colon, however, was 13.39 in1927, about the same as San Francisco's for that year, while Panama City's rate was 23.97 in 1928, which is higher than most large cities in the United States.

While these figures for the sanitated areas are very impressive, they do not give one any definite idea of the real situation in the interior of Panama. In the Hospital Santo Tomas, a 1.000-bed Panamanian institution which receives at least half of its cases from the interior, we find about 20 per cent of the patients wi'h malaria. Hookworm, ascaris, and E. histolytica are frequently present also. Dr. E. C. Faust' in the summer of 1930 reported a 12 to 18 per cent incidence of E. histolytica in hospital patients. In the Chagres river country, a similar survey showed a 33 per cent amebic infection. Dr. Herbert C. Clark, Director of the Gorgas Memorial Laboratory, revealed a malaria incidence as high as 60 per cent in some of the villages in this river basin, which borders the Canal Zone. About two-thirds of these are subtertian infections. This region has recently come into prominence as work has started on the Madden Dam at Alhajuela, on the Chagres, about 30 miles from Panama City. With prophylactic quinine and screening measures, the malarial rate for employees working on this dam has been reduced to 5 per cent. Control of malaria in this manner is a factor of considerable economic importance in any tropical project of this nature.

Since May of this year, five human cases of Chagas's disease have been found in the vicinity of Aquas Buenas, on this river, about 20 miles from Panama City. Infected Triatoma have been caught in the Chilibre caves in this region and are now the subject of an entomological study carried out by Major Lawrence Dunn of the Gorgas Laboratory. Bats, armadillos, opossums, and squirrels, harbor the Trypanosoma cruzi, and the infection may be given to various laboratory animals, with subsequent spontaneous recovery. Clinically, the disease is of little importance here, as none of the reported cases in Panama presented symptoms or clinical signs.3

Along the swampy coastal plains, from 22 to 25 per cent of the natives are infected with malaria. On surveys in the interior,

microfilaria are frequently seen, but clinical manifestations of filariasis are rare. spirochetes of relapsing fever are found on an average of about one case in every village during routine examination of natives for malaria. Yaws is endemic, especially among the San Blas Indians. We saw five cases in the Hospital Santo Tomas this summer. Children are almost universally infested with hookworm and/or ascaris, and practically every young adult in these countries has a reduced hemoglobin. At Palo Seco, three miles from Panama City, is a leper colony maintained by the United States. About three-fourths of the ninety-five inmates are natives of the country. Chaulmoogra oil and its derivatives are used but only about two lepers are discharged each year. Of the deficiency diseases, beri beri is occasionally encountered but is no problem, probably because the native diet consists largely of unpolished highland rice.

As for our own work in Panama, it is as yet too early to know what we accomplished in our short stay of five weeks. During this time Miss Dorothy Koch examined 1824 stool specimens, using the wet iron hemotoxylin staining technic. In 101 instances amebae were found, and eighty-eight infested patients were given Carbarsone. About half of this number live in Panama City, the remainder came from the interior and from Colon. Diarrhea and dysentery was noted in thirty-one patients, and constipation present in thirteen. No gastro-enteric symptoms were complained of in forty-four instances. A past history of dysentery was obtained only four times, which gives one an idea of how unreliable histories are in Panamanian mestizos. In the group there were twenty maternity cases. Eight individuals showed extensive liver and kidney damage and were not given the arsenical. Two patients undergoing chiniofon and bismuth therapy were examined and found positive for amebae during the treatment. Carbarsone-treated adults were given orally 5.0 grams of the drug in 10 days, and six children from 1 to 10 years old received about one-half the adult dose. Two patients left the hospital before completing the course and had but 3.0 grams. Thirty-seven cases were followed during the month of therapy, and in all but one instance where six or more specimens were examined after treatment, the pathogenic amebae were eradicated. Worms were not affected by Carbarsone. Diarrhea or dysentery cleared, when present before treatment, in every patient except one, and in this case there was an associated diagnosis of pellagra. The only untoward effects noted were a slight burning epigastric discomfort in two instances, and a transient faintness in four maternity cases that were treated after delivery. No evidence of arsenic toxicity was noted in any patient.

SUMMARY

Except for the studies of the Gorgas Laboratory on malaria, and human and horse trypanosomiasis, and the work of the Rockefeller group in treating hookworm and ascaris infections and malaria, there is no organized effort to solve Central America's many medical problems. Certainly the relatively high incidence of Onchocerca and amebae in Guatemala, and of malaria, amebiasis, and leishmaniasis in Costa Rica, deserve careful consideration as regards eradication of insect vectors, and prophylaxis and treatment in man. The results of the efforts of Panama Canal sanitary workers during the past twenty-five years is an example of what can be accomplished by competent physicians in the conquest of the tropics. Unfortunately, the sanitated area is confined chiefly to the Zone, particularly the terminal American and Panamanian cities. This leaves the interior of Panama, still heavily riddled with malaria, hookworm, yaws, filariasis, and amebiasis, as a potential source of danger to man.

In eighty-eight cases of amebiasis treated with Carbarsone (carbamino-phenylarsonic acid containing 28.3 per cent arsenic) in average oral doses of 5.0 grams in 10 days, a satisfactory response was noted in the majority of patients followed during the month of therapy (thirty-seven in this group). No symptoms of arsenic toxicity were noted.

REFERENCES

1. Is Carate (Pinta) a Dermatomycosis? E. Thonnard-Neumann, J. C. Moya, and K. C. Brewster. Nineteenth Annual Report, United Fruit Co., Medical Dept., 1930, p. 101.

2. Incidence and Significance of Infestation with Endameba histolytica in New Orleans and the American Tropics. E. C. Faust, Amer. Journ. Trop. Med., 1931 (May) xi, 231.

3. Chagas's Disease in Panama. J. W. Miller, Southern Med. Journ., 1931, (July) xxiv, 645.

4. Carbarsone (carbamino-phenyl-arsonic acid) containing 28.3% arsenic, a hitherto unused drug, is a more effective amebacide than acetarsone, ("stovarsol"), and on the basis of our laboratory and clinical studies a more satisfactory anti-emebic drug than any single agent or combination of agents now in use, including emetine and chiniofon ("yatren"). This arsenical given orally in an average dosage of 75 mgm. per kilo over ten days is clinically non-toxic, when prepared according to the original method, and has been effective without adjuvant in about 200 cases treated in California and Panama. Three hundred mgm. of Carbarsone per kilo body weight is tolerated over thirty days, given either orally or in part by rectum. The drug is contraindicated in the presence of liver and kidney damage and has not been used in hepatic amebiasis. It is cheaper than any other effective amebacide, or combination of anti-amebic drugs now in use.

Amebiasis. Comments on Various Amebacides.

Report of Case. H. H. Anderson and A. C. Reed, Calif. and West Med., 1931 (Dec.) xxxv 439-443. The Chemotherapy of Amebiasis. C. D. Leake, J. A. M. A. 98:195-199, Jan. 16, 1932.

Carbarsone in the Treatment of Amebiasis. A. C. Reed, H. H. Anderson, N. A. David, and C. D. Leake. J. A. M. A., 98:189-194, Jan. 16, 1932.

## CLIMATIC FACTORS OF SALT RIVER VALLEY AS THERAPEUTIC AIDS

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(Read before the Maricopa County Medical Society, June 22, 1931.)

This is a brief discussion of the age-old subject of the effects of climate on health by one who has had medical experience in several climates. We who have lived here as much as a few years, know that this climate has certain beneficent qualities and factors which tend to restore health and vigor to those who have fight left in them. To place convictions into words, however, at least for me, is not an easy nor a satisfying task. Ideas on climate are founded on experience and casual observations rather than upon experiment and scientific fact.

The outstanding feature of our climate, all will probably agree, is sunshine. For the next several weeks many of us may think we have a bit more of it than we like. This excess of sunshine has its redeeming feature, in that it drives many to take much-needed vacations, who might otherwise not take them. Temporary changes of climate and environment are essential, no matter how ideal a climate may be. It is the summer sunshine which stays through the winter that makes the Salt River Valley and similar parts of Arizona outstanding when their winter climates are compared with those of practically all other parts of the United States.

What are the attributes and effects of sunshine? It dispels gloom both actual and psychical. The person who is ill physically is, ordinarily, ill, or at least affected, mentally. A dull day is depressing to his already depressed mind, and a bright one is cheering. Physicians know that illness is universally worse at night than in the day and worse on gloomy days than on bright ones.

Disease commonly results directly or indirectly from bacteria. Bacteria are disseminated by being deposited, here and there, by those who are diseased, and then being acquired by others before the bacteria are lifeless. Unless bacteria are protected, they are killed by a few minutes' direct sunshine. Spread of disease is more thorough in places with relatively little sunshine than in places with much sunshine, other factors being equal.

Sunshine has ultraviolet light—those rays

which supply vitamine D. The children of Arizona are notoriously healthy and free of rickets. They absorb light rays through the skin, winter and summer. Clothes are needed in the summer to prevent their getting too much of the ultraviolet light. Throughout the year, vitamine D, and perhaps other chemical deposits from the sun, may also be gained through the alimentary canal by the foods grown under the influence of strong sunlight.

Our sunshine-grown foods are shipped to various parts of the United States, 'tis true, but they suffer in freshness in spite of modern refrigeration. Artificially ripened fruits and vegetables certainly suffer in taste and probably also in digestibility. The medical profession is realizing more than ever the importance of the character, condition, and preparation of food. Spoiled food has always been recognized as deleterious and often dangerous. We are just beginning to consider the dangers of partially spoiled foods. Therefore, it becomes a matter of first importance to be located in the vicinity where liberal supplies of good foods are grown.

Sunshine is the general source of heat; winter days here usually are comfortably warm. Even those who are enfeebled by illness or age may spend their days out of doors. It is common knowledge that the mere being out of doors is conducive to a return of health. This has been demonstrated in the cold bleak Adirondacks and in numerous other places, even in the absence of ultraviolet light and the cheer of sunshine. There are numerous conditions, such as arthritis, neuritis, and other maladies, in which warmth becomes a most important therapeutic agent.

Due to the universal use of dry-bulb thermometers, our summer temperatures have a reputation for excesses which is unwarranted. When one reads that the Phoenix thermometers recorded 112 or, possibly, occasionally 115 degrees, he naturally compares it with his experiences of perhaps 100 degrees in other places and becomes terror stricken. In the main, fear of the heat is purely a state of mind and drives many away just at the time when they would receive the greatest benefits if they but remained. The continued heat of summer is certainly not so harmful as it is nonotonous. We have practically no heat strokes.

A low humidity, especially in summer months is most fortunate. It is lack of humidity that makes our 110 degrees more comfortable than St. Louis's 85 to 90 degrees. Evaporation from the skin, when the atmosphere has little or no moisture, is rapid and takes heat from the body,

It really is "not the heat but the humidity that counts."

It has been said that irrigation is ruining this climate because of the increased humidity. The weather bureau's statistics show that our average humidity for a year is as low as, or lower than, other favored communities of the southwest.

The average humidity for the year 1929, of several of the cities of Arizona, is shown in the following table taken from the U. S.

Weather Bureau reports:

Ajo	A.jo Zlemenceau		Phoenix	Prescott	Tucson	Yuma
7:30 am	6 am	6 am	6 am	7 am	8 am	6 am
41	46	74	50	58	53	55
3 pm	6 pm	6 pm	6 pm	6 pm	6 pm	6 pm
22	31	43	23	35	27	24

It is only fair to call attention to the difference in the time of the recording of the figures. The earlier the record is made in the morning and the later in the evening, the higher the relative humidity percentage. It will be noted from the table that Phoenix has a humidity only slightly higher than that of Ajo and Clemenceau.

Places with dry atmospheres and high daytime dry-bulb temperatures have relatively low night temperatures. The fall begins as soon as the sun gets low in the heavens and usually gradually increases until about time for sunrise. This temperature change affords us cool nights practically the year around. We rarely ever, if sleeping conditions are at all favorable, have nights here when sleeping is uncomfortable. The new-comer needs to learn that, as the sun disappears, a light wrap, even on an occassional summer night, when out-of-doors, is necessary to prevent the rapid chilling of the body.

Persons who have not experienced a summer in our climate usually find it difficult to understand how we exist here in summer, to say nothing of our actually enjoying the summers or, at least, considerable parts of them. I explain it to them by saying that they could come for a stay when our thermometer is running the highest and as soon as they have learned to discard unnecessary clothing and to accommodate themselves in other ways, they would say, "There is nothing so terrible about the hot days: this climate is maligned by the weather bureau reports." Then I tell them, if they would stay for six weeks, they would begin to get tired of the heat, especially when realizing that there is another six-weeks or more of it to follow. It really is not the heat we dislike, but the monotony of it. The prolonged heat, however, has great potential good for many of the sick.

Our relative freedom from winds and storms is a delightful feature. Yet there is ordinarily sufficient breeze to carry away the little smoke of our more densely populated areas. Electric power largely takes the place here of coal-generated steam. Irrigation has practically done away with dust and dust storms, so common in desert areas.

Dr. S. A. Knopf, in an article, published a few days ago in the Journal of the American Medical Association, entitled "Climate in Tuberculosis and the Prevention of Relapses", had the following to say. ideal climate for the average patient with pulmonary tuberculosis in the earlier and more hopeful stages of the disease, is the one in which the extremes of temperature are not great, with only rare fogs or none at all, with the purest possible atmosphere, with relatively little humidity, with much sunshine, and with all conditions that permit the patient to live comfortably out doors the greatest number of days out of the year and the greatest number of hours out of the tyenty-four." Again, he says: "When there is a tendency to wet catarrh, the extremely hot and dry climates, provided dust storms are not frequent, are often beneficial."

We have seen many patients with tuberculosis, or other chronic wasting disease, just barely hold their own, or perhaps even slip a little, through the winter months, and then, as summer advanced, make definite gains. The second or third summer, perhaps, brought about an arrest or possibly a cure. The laymen here frequently say one summer is worth two winters for a person with tuberculosis, or other chronic illness.

A feature of this climate which needs to be widely advertised is its proximity to mountain districts where one may find any grade of summer temperature he may wish. The natural scenery of the mountains and of the deserts, permeated by excellent highways, is a constant delight to those who call this valley home; to the visitor, if he is sufficiently convalescent, the scenery is a constant source of thrills and joy; exploring the interesting places is a never-ending and pleasant occupation.

The numerous archeological deposits of prehistoric peoples in and near the valley, are also of exceeding interest, especially to those who have not previously contacted them, as well as to those trained in archeology. Phoenix is fortunate indeed to be the owner and developer of a city of the dead, known as Pueblo Grande, situated six miles from the center of Phoenix, on the banks of the Grand Canal. This large Indian mound

covers nearly three acres. Excavations now made indicate that here was a city with buildings of stone and adobe, which in its hey-day must have stood around 30 feet in height with a one-time population of perhaps thousands. During the past two years, Fhoenix has employed a professional archeologist to excavate and to preserve the buildings and findings of Pueblo Grande. It has become already a place of great interest to the visitors.

The citrus groves, date gardens, cantaloup, lettuce, and other vegetable fields are places of intriguing interest, as are also the fields of alfalfa, cotton, and so forth. There are endless other natural diversions and amusements and many more to be developed.

From time immemorial, the sick have been sent from their ordinary places of abode to other climates, usually to less populous areas and to climates where weather conditions are considered to be more favorable than those at home. Since the beginning of the United States, the tendency has ever been to send the weakened individuals west. The day was when the belief was general that, if a sick man could reach the prairies of the middle-west, his chances of getting well were greatly enhanced. Then came the period when Kansas and Colorado were havens of convalescence. Now it is New Mexico and Arizona and similar places which hold first rank as restorers of health. It has ever been outward from centers of population to sparsely settled areas. It would seem that a part of the good the sick have thus obtained, has been in getting away from the masses—probably in getting away from the masses' bacteria. It is the amount of infection one gets which usually is serious. A person may likely successfully combat a small amount of infectious material, whereas he might succumb to a massive infection. Our sunlight probably destroys bacteria so readily that massive infection here is rare. Our desert localities certainly combine separation from the masses and the masses' bacteria with the bacteria-destroying power of the sun, in an admirable way.

Too often, patients are sent here by physicians and told by them that they need no medical attention, that just a few months of our good air will effect cures. This is a terrible blunder; it costs many lives; and nothing could be further from the truth.

Climate is no substitute for medical and nursing care. In this connection, I say from mature judgment that the medical and the nursing profession here are of the highest type and need take no back seat in any company. Because of advantages, I believe we are better experienced in handling certain

cases than are physicians in many of the medical centers.

Of all the things which can be done for a patient, climate's advantages amount perhaps to about 10 to 20 per cent. The 10 to 20 per cent accumulates like compound interest and will often be the factor which will insure recovery.

Living costs are important. Where there has been prolonged illness, the family purse may have been nearly or quite exhausted. We should provide living quarters so that those who come can find that which will fit their purses. If we advertise our advantages, a frank statement as to the costs should be given. One who can not be assured of just as good medical and nursing care and comforts as he would have at home, should be told plainly not to come. Costs, however, compare favorably with those of like quality elsewhere.

The diseases which may be favorably influenced by our climate are numerous and listing them would be like compiling a catalogue of chronic diseases. The respiratory tract diseases—tuberculosis, asthma, sinusitis, bronchitis, bronchiectasis, emphysema, and pleurisy—are classic examples of diseases which are benefited by mild climates. Classed along with these should be arthritis, rheumatism, neuritis, nephritis, cardiac disorders, rickets, undernourishment in children, certain nervous troubles, and so forth. The aged find our mild climate particularly enjoyable and beneficial.

It is our duty to humanity to advertise our climatic advantages; but let us do it in a way that will bring only those who will not be done harm. The question of having necessary finances for prolonged stays sshould be stressed.

#### A CASE OF ACUTE BENIGN LYMPHADENOSIS

(Infectious Mononucleosis, Glandular Fever)

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(Read before the Staff Meeting of the Good Samaritan Hospital, Phoenix, Arizona, December 28, 1931.)

Pfeiffer in 1889 was first to describe this disease, and noted accurately the various clinical signs. Longcope', in 1923, reported ten cases in which he accurately described the disease and established it as a clinical entity in this country. Hal Downey and Mc-Kinley', in 1923, were the first to describe in detail the blood picture and differentiate it from acute leukemia. Since then, a large number of articles, describing principally its hematological and etiological aspects, have

appeared in both the foreign and American literature.

#### **ETIOLOGY**

The disease occurs endemically and sporadically. Children are most frequently affected, although, in recent years, a large number of cases in young adults have been reported. The contagiousness of the condition has been repeatedly proved. It seems to occur concomitantly with influenza. It is believed that there are small outbreaks of a mild type which escape medical attention. Outbreaks in schools and orphanages have been reported by Tidy and Morley<sup>3</sup>, Lemann<sup>4</sup>, and Davis'. Schwarz' believes that this condition is caused by a lymphotrophic virus. Recently Nyfeldt has isolated a diplobacillus from a case which resembles somewhat the organism of infectious monocytosis of rabbits. Bland has also produced a disease in rabbits by inoculating with blood from two cases. The rabbits showed fever, enlargement of the spleen and liver, with focal necrosis and an increase in mononuclear cells of the blood. In three cases, his results were negative. These findings await further confirmation.

#### PATHOLOGY

Since the disease is rarely fatal, there is little knowledge of postmortem changes. Longcope found change similar to that seen in Hodgkin's disease, in a biopsied node of one of his cases. Enlargement of the spleen and liver are commonly described clinically. Bilateral enlargement of the cervical lymph nodes, particularly the sub-maxillary and posterior groups, is constant. Rarely, other groups of nodes are involved.

#### SYMPTOMS

The incubation period is estimated at between five and ten days. The onset is acute, characterized by fever, loss of appetite, and, frequently, vomiting. Constipation is the rule, although in mild cases diarrhea has been reported. The temperature is subject to daily variations, with remissions in the morning and with an evening rise. lymph nodes in the neck usually enlarge early in the disease. Cases are on record in which the enlargement occurs late in the course of the disease. In the vast majority of cases, the submaxillary nodes are involved. Frequently, one side is first involved and later the other side; still later the posterior cervical nodes enlarge. The nodes are hard and tender. Stiffness of the neck may result from involvement of the posterior cervical group about the sternomastoid muscle. Rarely, the axillary and cervical glands may show enlargement, and a frequent complaint is pain in the mid-abdomen. Dysphagia and croup may result from involvement of

the mediastinal lymph nodes. The temperature may fall by lysis on the third to the seventh day, but, not infrequently, may last from two to three weeks. This may be accompanied by profuse sweating. During the disease, a slight redness of the throat may be noted, although this is not a constant finding. The leukocytic count increases slowly, with an absolute increase in lymphocytes and a decrease in the granulocytes. The blood picture will be described presently.

The prognosis is good except in cases complicated by acute nephritis or otitis media.

#### DIAGNOSIS

In typical cases, the diagnosis can be made with a fair degree of certainty by clinical examination alone. In the very acute cases, the question of differentiation from acute leukemia rests upon hematological findings. In infectious mononucleosis, hemorrhages, anemia, angina, which are fairly common in acute leukemia, are usually absent. Other conditions which must be considered in the differential diagnosis are mumps, calculi in the salivary ducts, and Mikulicz's disease.

#### CASE REPORT

The clinical and hematological aspects of a case which came under our observation recently are briefly as follows:

Present illness: A white boy, age 10.5, became ill November 2nd, two and one-half weeks ago, while playing football. He had no appetite and looked feverish; the temperature was 102° F. He had no pains or aches. A dose of castor oil was prescribed, to be repeated daily. The temperature fluctuated daily between 97° and 104°, highest in the afternoon with remissions in the morning. Chills occurred with the high peaks of temperature. No glandular enlargement was noted until November 16th, when an enlarged subangular node was discovered on the right side. Two days later a similar enlargement appeared on the opposite side, and, subsequently, the posterior cervical and axillary nodes also enlarged. The spleen was palpable on November 19th. At this time, he complained of a mild sore throat and of a sense of abdominal fullness, but no pain. His bowels moved regularly, with daily doses of castor oil.

Past History: Tonsillectomy five years ago. Not subject to head colds. No discharging nose. No ear aches. Measles and mumps, but no other acute infections. A normal nine months' baby. Has had fever and general malaise with eruption of teeth. Respiratory: No chronic cough, no night sweats. No hemoptysis. Has been gaining weight normally. Cardiovascular: No shortness of breath, no precordial pain, no palpitations of the heart, no swelling of ankles. No acute rheumatic fever. Gastrointestinal:. No epigastric nor abdominal pain. No nausea nor vomiting. No tendency to diarrhea or constipation. Genito-urinary: No nocturia. No frequency nor urgency. Has not been a bed wetter. Family History: Father and mother living and

Family History: Father and mother living and well. One brother living and well, one sister died of meningitis. No exposure to tuberculosis.

Physical Examination: Pulse 84, respiration 20, temperature 101, blood pressure 110/76. Fairly well nourished, rather pale-appearing boy. His skin and mucous membranes have good coloring. There

is no definite apparent pain. Child does not have any specific complaints except feeling tired and weak. There are not petechial spots. Pupils react actively to light and accommodation. No ocular abnormalities. Ear drums are normal. There is slight congestion of nasal mucous membranes. There is no apparent obstruction, only a slight glairy discharge. Teeth in good condition. Tongue slightly coated and moist. Pharynx slightly congested. Tonsils gone. There are no white spots in the throat. There is a large, slightly tender, rather firm and elastic, elongated mass, taken to be a lymph node, at the right angle of the jaw. extending downward and inward. Below this node, there is another smaller node which seems to be somewhat adherent to it. A few shotty nodes are felt in the lower anerior cervical chain on the same side. In the same relative position at the left angle of the jaw, there is an enlarged tender node, smaller than the one on the right, also another node below and inside of this one. The left anterior chain is also enlarged but less markedly than the one on the right side. Some shotty lymph nodes are felt in both axillae, rather small, about the size of peas. Other superficial lymph nodes not enlarged. Thy-roid not enlarged. No tremors. Chest well developed, expansion good and symmetrical. Lungs clear and resonant throughout. Heart not enlarged, action regular and slow, sounds of good quality, no murmurs. Abdomen soft, liver not felt, the spleen is felt 2 cm. below left costal margin, edge rounded, rather soft. No tenderness. No other masses. Extremities normal. No edema. Knee jerk active and equal.

Laboratory findings: November 7, urinalysis: Very faint trace albumin, specific gravity 1020, acid, no sugar; microscopic, 2 to 5 white blood cells, occasional epithelial cells, no casts nor red blood cells. Blood culture in nutrient broth and blood sugar plates, negative. Agglutination test for Malta fever negative. Blood count: see chart I. November 12: Blood culture repeated with no growth. Agglutination tests using B. melitensis and typhoid bacilli, negative. Stool examination: Semisolid, no occult blood, no parasites or parasitic ova. November 20, urinalysis: Specific gravity 1020, albumin trace, sugar negative, few epithelial cells, occasional white blood cells, no casts. November 30, urinalysis: Specific gravity 1034, albumin negative, sugar negative, occasional white blood cells, calcium oxalate crystals, occasional epithelial cells, small amount amorphous urates. Examination of blood smear-Wright stain. The lymphocytes are mostly of the meso and macro type. The nuclei show at times, definite lobulation. There is no evidence of immaturity of the nuclei in slide obtained November 17, where a slight reversion to immaturity is noted in the nuclear pattern of some of the lymphocytes. On the whole, the nuclei are pachychromatic. A slight cloudiness and lack of clear definition of the chromatin strands are noted in preparations collected on the 17th and 19th. The cytoplasm is abundant. There is a concentration of basophilic substance at the periphery of the cells and a large amount of faint yellowish-blue cytoplasm. The azurophilic substance is increased in amount. In many lymphocytes there is a striking foamy appearance of the cytoplasm.

Course: At no time was the boy very uncomfortable. He was rather listless and lacking in appetite, but, except for the mild sore throat, felt surprisingly well. The temperature remained irregular for 21 days, some days not rising above 100°, on others spiking to 102°, 103°, or even 104°. It came down gradually by lysis. The lymph nodes remained after the recovery, but decreased in size slowly. There were no complications.

#### COMMENT

This case is typical in both its clinical course and in the hematological picture. The condition of the lymphocytes is identical with that described for this disease by Downey. It is readily differentiated from the leukemias and other conditions in which there is a relative or absolute increase in numbers of lymphocytes, by the characteristic changes in the cytoplasm and nuclei of the lymphocytes.

In view of the clinical course and blood picture, it is almost certain that we are dealing with an acute infectious disease of a specific nature, which stimulates the lymphocytes to proliferation and produces degenerative and alternative changes in them. If the work of Nyfeldt and Bland is confirmed, we shall have advanced another step in the knowledge of acute specific infectious disease and light may be thrown on prevention and treatment of this interesting disease

This patient is a characteristic case of acute infectious mononucleosis from every standpoint. Clinically, there are distinct features which should make one think of the condition even before obtaining a blood count. The child ran a very irregular fever, with chills at the high peaks of temperature. He had a mildly sore throat but otherwise felt perfectly well, and there was irregular enlargement of the cervical glands. Different groups of superficial lymph nodes may be affected, but commonly there is enlargement of one of the nodes at the angle of the jaw, with later progressive enlargement of other nodes. The spleen is often palpable and there may be abdominal discomfort. Occasionally, the symptoms are more striking. There may be cutaneous and mucous membrane hemorrhages, with severe sore throat, suggesting acute leukemia. Unlike the latter condition, however, there is usually only a mild secondary anemia and the course is relatively benign. Although albuminuria is common during the febrile stage, a severe nephritis only rarely occurs. The fever usual-

round appearance of the cycopiasm.											
Date	WBC.	RBC.	NEUTR	OPHILS				LYMPHO	CYTES	MONO	CYTES
		Segm.	Stab.		Eos.	Baso.	Micro.	Meso.	Marco.	Total.	
Nov. 4.	5600	5100000	38.5%	5%	1.5%	0	20%	28%	4%	52%	3%
Nov. 17	12300	4700000	14.0	2.5	0.5	0	11	47	24	82	1
Nov. 19	14000		11.0	4.0	0.0	0	26	42	18	86	1
Nov. 30	7650	4550000	12.0	2.0	2.0	0.5	32.5	45	6	83.5	0.5
Dec. 23	7700	5100000	47.0	2.0	11.0	1.0	31.5	6	1.5	39.0	1.5
		Blood com	nts made	during t	the disea	se and	shortly a	fter recov	erv.		

ly lasts two to three weeks, occasionally longer.

From a diagnostic standpoint, many conditions must be differentiated early in the disease, such as sinusitis, sepsis, Malta fever, typhoid fever, tuberculosis, pyelitis, and so forth. This is made more difficult in view of the fact that the characteristic blood picture may not occur in the first week or two. Once the mononuclear leukocytosis is well established, however, there is only one disease that is important to differentiate clinically in this stage. The condition may closely resemble acute leukemia, and it is often on the pathologist that we may have to depend to make the correct diagnosis. difference between the leukemic cell and those of lymphadenosis is apparently quite striking, but, without this microscopic differentiation, we might be quite concerned if a child had acute angina, hemorrhages, high fever, and lymphocytosis. In acute infectious mononucleosis, the count rarely exceeds 20,000, but this may be the case in acute leukemia. It is interesting that in glandular fever the mononucleosis may persist for weeks or months, with a very gradual return of the cells to normal.

Many mild cases of this disease are, no doubt, often overlooked or wrongly diagnosed as some other condition. When there is an exudate present on the tonsils, it may be considered a protracted case of tonsillitis. It is not an uncommon disease in children and has also been frequently reported in young adults. It was first described by Pfeiffer in 1889. In this country, the condition was not generally recognized until 1923, when Longcope revived interest in the subject by describing ten cases. Since then there have been numerous case reports. There have been several hospital epidemics reported among infants, and I have seen three members of a family affected. This would lead one to infer that it is quite highly infectious. Nothing definite is known as yet about the The gram-positive diplobacillus described by Nyfeldt in 1929 has not been generally accepted as the cause of the disease.

#### REFERENCES

- 1. Longcope, W. T.: Infectious Mononucleosis (Glandular Fever) With Report of Ten Cases. Am. J. Med. Sc., 164:781, 1922.
- 2. Downey, H., and McKinlay, C. A.: Acute Lymphadenosis Compared With Acute Lymphatic Leukemia. Arch. Int. Med., 32:82, 1923.
- 3. Tidy and Morley: Glandular Fever. Brit. M. J., 1:452, 1921.
- 4. Lemann, I. I.: Glandular Fever, With Report of a Small Epidemic. New Orleans Med. and S. J., 81:187, 1928.
- 5. Davis, C. M.: Acute Glandular Fever of Pfeiffer, J. A. M. A., 92:1417, 1929.

6. Schwarz, E.: Infectious Mononucleosis. Arch. Innere Medizin, 19:205, 1929.

7. Nyfeldt, A.: Etiology of Infectious Mononucleosis. Compt. Rend. Soc. de Biol. 191:590, 1929.

8. Bland, J. O. W.: Glandular Fever; an Experimental Investigation, Lancet 2:521, 1930.

### THE SURGICAL TREATMENT OF PEPTIC ULCER

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(NOTE:—This paper was published in our December issue, but it contained so many typographical errors that it was decided to republish it.—Editor).

Generally speaking, the term peptic ulcer is applied to ulcer occurring in the duodenum, stomach, or jejunum, and strictly speaking it is a misnomer, for in no wise are these ulcers similar. They differ materially in their response to treatment. The surgical procedure of choice for ulcer depends largely on whether the lesion is duodenal, gastric, marginal or jejunal.

The results following surgical treatment of duodenal and gastric ulcers are best when care is exercised in the selection of cases, and when the indications for surgery are most definite. Repeated hemorrhage, perforation, obstruction, or gastric retention resulting from duodenal ulcer, represent more or less urgent indications for surgical treatment. Disability and inefficacy of medical management comprise indications for surgery which cannot be disregarded. Many cases of duodenal ulcer of short duration will respond to medical treatment. Many others, where symptoms are sufficiently mild to produce little if any disability on medical and dietary management, are not surgical. There are definite specific indications for medical treatment. However, to conduct and prolong ineffectual medical treatment in cases possessing definite and unmistakable surgical indications, not only postpones the benefits to be derived from surgical intervention, but often allows the patients to become a poor surgical risk. In general, it may be stated that approximately 50 per cent of duodenal ulcers become surgical.

Surgeons are very prone, and properly so, to regard most gastric ulcers as surgical in the absence of contraindications to operation. Unquestionably many gastric ulcers will heal under proper medical management, but the relationship between gastric ulcer and carcinoma of the stomach cannot be denied. Whether or not there is any degree of agreement between surgeons, internists and pathologists, regarding the incidence of carcinoma developing upon an old gastric ulcer, it must be recognized that the clinical dif-

ferential diagnosis between benign gastric ulcer and early carcinoma is not always easy and accurate. There are many lesions of the stomach, as determined by clinical and roentgen-ray examination, where only exploration and microscopic section will determine the accurate diagnosis. The therapeutic test of differentiation has at times allowed an operable lesion to become inoperable during the period of observation. I repeat that, even though some gastric ulcers respond to medical management, most gastric ulcers, by virtue of their actual and potential pathology, in the absence of contraindications, are surgical lesions. Likewise, it has not been my good fortune to observe permanent benefit from medical and dietary management of marginal and jejunal ulcers when they occur. Their persistence under medical management has frequently resulted in hemorrhage, perforation, and gastro-jejunalcolic fistula.

The most satisfactory results incident to the surgical treatment of duodenal ulcer are those following posterior gastro-enterostomy for varying degrees of pyloric obstruction. These excellent results led to the deduction that if gastro-enterostomy produced satisfactory results when obstruction occurred secondary to duodenal ulcer, the same procedure should produce similar results when used in non-obstructive types of duodenal ulcer. Experience has proved such conclusions not well founded.

Although the technical procedure of gastro-enterostomy has been standardized, its indications have not always been adhered to. The operation of gastro-enterostomy provides excellent results in 88 to 90 per cent of cases when technically and accurately performed in the presence of true indications for surgical treatment of duodenal ulcer. The procedure fails to provide satisfactory results in cases unsuited to such procedure. It fails because it is at times still performed on the suspicion instead of the demonstration of an It fails through the persistence of foci of infection or other probable causes of ulcer, or because of individual susceptibility in a small percentage of cases to recurrence of ulcer; through faulty technic, particularly undue trauma, which certainly must be a factor in the causation of marginal or jejunal ulcer; and also fails through early postopera-The unsatisfactory retive indiscretions. sults that occasionally occurred following gastro-enterostomy led to the development of the direct operations, which, for the most part, have a limited field of usefulness.

The direct operation of excision of duodenal ulcer should provide a high percentage of good results, and is a procedure particularly applicable to the bleeding type of duodenal ulcer. Unfortunately, in many cases in which hemorrhage has been a predominating symptom, there is so much inflammatory reaction about the ulcer in the acute and subacute lesions, or so much scarring in many of the chronic lesions, that the indirect operation of gastro-enterostomy becomes the procedure of necessity. Also, the direct operation is not always applicable to the lesions on the poster. The indirect ior wall of the duodenum. operation of gastro-enterostomy has been successful in controlling the symptom of bleeding in about 50 per cent of the cases of The direct operableeding duodenal ulcers. tion partial duodenectomy described by Judd has, when applicable, afforded greater assurance against recurrence of bleeding than any other type of surgical procedure.

Experience in recent years has shown that the results of simple excision of duodenal ulcer have not been as satisfactory as those in which some type of pyloroplasty has been done in addition to local excision of the ulcer. The Heineke-Mickuliecz, the Horsley, and Finney operations have had to do with the division of the pylorus, with varying results. Hors'ey recently reported but 45 per cent satisfactory results following his operation, failure having been due in most of the remaining cases to recurring ulcer along the pyloroplasty incision. Judd has not only divided the pyloric sphincter, but has excised the greater part of the sphincter, making a gastroduodenostomy, converting the stomach and duodenum into one continuous tract, thereby producing about the same physiologic changes that occur in cases in which gastro-enterostomy is performed. This operation has been done with a mortality rate of less than one-half of one per cent, and has provided results comparable to the best results following gastro-enterostomy in carefully selected cases. There are, however, certain limitations to the direct operation of excision and partial duodenectomy.

The indirect operation of gastro-enterostomy has given better results when used in cases of old chronic duodenal ulcer, with or without obstruction, than when employed in those cases of relatively short duration, and particularly in young people. It has a higher percentage of applicability than any of the direct operations; and few, if any, of the direct operations, even though applied in carefully selected cases, have been productive of the results derived from gastro-enterostomy. Even though gastrojejunal or jejunal where does occur following gastro-enterostomy, and has been credited with failure to obtain a satisfactory result following gastroenterostomy in 3 to 30 per cent of the cases, a low incidence is the rule, and quite probably the true incidence is within 5 per cent. Failure to remove associated disease in the appendix and gallbladder, and the persistence of associated organic disease outside of the stomach and duodenum, are unquestionably responsible in no small measure for incomplete relief following the conservative operations for duodenal and gastric ulcer. radical operation of partial gastrectomy has little if any place as a primary procedure in the surgical treatment of duodenal ulcer. The direct and indirect operations are performed with a mortality rate approximating 2 per cent. In the last 635 cases of duodenal ulcer operated upon on my surgical service at the Mayo Clinic, there were fifteen deaths, a mortality rate of 2.3 per cent. The average mortality rate of partial gastrectomy is certainly no less than 10 per cent, and recently Hartwell and Felter have reported a mortality rate as high as 36 per cent for this procedure in duodenal ulcer. Primary partial gastrectomy for duodenal ulcer affords little more if any assurance against recurrence of ulcer than do the conservative precedures and no one has yet, to my knowledge, reported results following this radical procedure which surpass those obtained through conservative procedures. Partial gastrectomy is at times necessary as a secondary operation for persistence of bleeding after gastro-enterostomy and, in the absence of a marginal ulcer, such partial gastrectomy may be done with excellent prospects of cure and a minimum risk by preserving the gastro-enterostomy and completing the procedure as a Billroth No. II. The results are so excellent and the risk so small following gastro-enterostomy or the direct operation of excision, with resection of the pyloric sphincter, in the surgical treatment of duodenal ulcer, that the radical operation of partial gastrectomy should be reserved as a secondary procedure, when necessary, for persistent bleeding or recurrence of ulcer.

The problems associated with the surgical treatment of gastric ulcer are considerably more complex than those in duodenal ulcer. The benignancy of duodenal ulcer is practically absolute, and rarely is primary malignancy of the duodenum encountered. Whether or not any relationship exists between gastric ulcer and malignancy developing upon an old gastric ulcer, is a question of great importance and one regarding which there is still considerable controversy. It is quite probable that most gastric carcinomas are malignant lesions from their inception. However, there is much evidence in support of the opinion that gastric ulcer has been the forerunner and has provided the cellular changes which subsequently constitute a true malignant lesion in some cases. The chief problem relates to the differential diagnosis between gastric ulcer and early operable carcinoma, which frequently may be accurately established only through surgical exploration and microscopic section.

To establish the accuracy of diagnosis by such methods necessitates excision of the lesion, which may be accomplished by relatively conservative or radical procedures. For true gastric ulcer, the conservative procedures are usually the ones of choice, reserving the radical procedure of partial gastrectomy for those lesions not suitable for conservative surgery. While the direct operation of excision is highly desirable, the acuteness of the lesion. extensive inflammatory reaction associated with protective perforation or inaccessibility of the ulcer through its high situation in the posterior wall of the stomach, may make only a gastro-enterostomy applicable. In a series of 123 cases of gastric ulcer I performed a simple gastroenterostomy in 22 per cent of the cases. Balfour has recently reported a mortality rate of 3 per cent and 70 per cent satisfactory results in 100 cases of gastric ulcer in which gastro-enterostomy only had been

The incidence of obstruction is high in gastric ulcer situated near the pylorus. However, gastric retention of high degree is frequently noted when the ulcer is situated well away from the pylorus, and in most instances is not due to mechanical obstruction but to disturbance of gastric motility through loss of continuity of gastric musculature. In very few cases of surgical gastric ulcer may a good result be expected following simple excision of the lesion, unless it is for ulcer in the cardiac third of the stomach. Some degree of retention, with delayed emptying of the stomach, may persist after simple excision through continued disturbance of gastric motility, and to obtain the best results from conservative excision, the indirect operation of gastro-enterostomy must supplement it. Cautery excision of the entire lesion has proved a most satisfactory procedure when combined with gastro-enterostomy. It is accomplished with a low mortality rate and followed by excellent results.

Conservative excision of the lesion, with gastro-enterostomy in all but four cases, was the method employed in 77 per cent of the direct operations in my series of gastric ulcer. Some type of resection was used in the remainder, with the exception of four cases in which there had been acute perforation. Partial gastrectomy, after the method of Polya, was most frequently employed. The Billroth No. II was the final procedure in two cases in which a resection was done as the second

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stage of a two-stage operation, a posterior gastro-enterostomy having been previously made. There are certain cases in which the two-stage operation is to be recommended, particularly in patients in poor general condition, and in cases in which the one-stage excision of a large perforating lesion would be accompanied by an unjustifiable risk. Billroth No. I and the sleeve resection have a very limited field of usefulness. The latter procedure is particularly suited to the hourglass deformity occasionally encountered in gastric ulcer. However, recurrence as an anastomotic ulcer in the suture line, with recurrent hour-glass deformity, is not infrequent. Just recently, I have performed a partial gastrectomy for such a recurrence.

The choice of surgical procedure depends largely upon the size and location of the lesion and upon whether or not perforation has occurred. To disturb the protection afforded by the liver, pancreas, or gastrohepatic omentum in the presence of a large subacute perforating ulcer with much surrounding inflammatory reaction, contributes greatly to the risk of any direct operation. On the other hand, many small or medium-sized ulcers that have gone on to perforation, with subsidence of the subacute inflammatory process, and have assumed the characteristics of a chronic perforated lesion, may be readily excised. Partial gastrectomy may be the procedure best suited to certain gastric ulcers, but the conservative procedure of cautery excision of the lesion and posterior gastroenterostomy is applicable in a high percentage of cases. It assures approximately as good a result as a partial gastrectomy and it is accomplished with less risk.

The postoperative development of marginal or gastrojejunal or jejunal ulcer has mitigated considerably in the past in condemning the conservative procedures in the surgical treatment of gastric and duodenal ulcers where gastro-enterostomy has been employed as an indirect operation for duodenal ulcer, and when used in conjunction with excision of gastric ulcer. The high incidence of marginal or jejunal ulcer following gastro-enterostomy, as reported by the advocates of radical partial gastrectomy, provides insufficient grounds upon which these conservative procedures may be discarded in favor of the more radical and certainly more hazardous procedure of partial gastrectomy for these benign lesions of the stomach and duodenum. While the incidence of marginal and jejunal ulcer has been reported as from 3 to 30 per cent, the true incidence is probably not more than 5 per cent, and, while such lesions are responsible for failure of gastro-enterostomy, the same complication accounts for failure following partial gastrectomy in a definite percentage of cases, which fact cannot be disregarded. When marginal or jejunal ulcer does develop subsequent to gastro-enterostomy, one may retrace his steps and restore the continuity of the gastro-intestinal tract as a secondary procedure, or resort to partial gastrectomy when necessary. Secondary operations for marginal or jejunal ulcers developing subsequent to partial gastrectomy are of necessity hazardous and radical.

In recent years, there has been a tendency to employ the radical operation of partial gastrectomy for gastrojejunal or marginal However, even though partial gastrectomy becomes the procedure of necessity in certain instances, the relatively high incidence of recurrence of ulcer following such radical procedure has served to curb enthusiasm for partial gastrectomy and has instituted a reversion to the more conservative procedures formerly used most satisfactorily. Of these procedures, taking down the gastroenterostomy and excising the marginal ulcer. with restoration of the continuity of the gastro-intestinal tract and some type of pyloroplasty, has been the procedure of choice, and is again being properly returned to that position. Its usefulness is limited to those cases in which the duodenum and pylorus can be mobilized, and to those cases in which, as a result of the original duodenal ulcer, there is not sufficient scarring and contraction to preclude some type of pyloroplasty. Partial duodenectomy and gastroduodenostomy, after the method described by Judd, has proved a most satisfactory type of operation to employ in conjunction with excision of the marginal ulcer and taking down of the gastro-enterostomy when the duodenum can be mobilized. In those cases in which the duodenum and pylorus are not readily accessible, some type of gastric resection usually must be resorted to. When gastrojejunal-colic fistula, fortunately of infrequent occurrence, has complicated a marginal or jejunal ulcer, the general condition of the patient is such that radical operations are not well tolerated, and here again the most simple surgical procedures are necessary to conservation of life.

I should like to leave with you the idea that the treatment of peptic ulcer requires differentiation as to whether the lesion is duodenal, gastric, marginal or jejunal. Uncomplicated duodenal ulcer often responds to medical management. Failure of response to such treatment, repeated hemorrhage, pyloric obstruction, or perforation, represent true indications for the institution of surgical procedures, among which the operation of partial

gastrectomy has no place as a primary operation. Most gastric ulcers, by virtue of their actual and potential pathology, in the absence of contraindications to operation, are surgical lesions, and, while partial gastrectomy is at times the most readily applicable procedure, conservative surgical excision and the indirect operation of gastro-enterostomy is readily done in the majority of instances. The indications for surgical treatment of peptic ulcer must always be sufficiently definite to justify the risk and the mortality rate attending any surgical procedure. The consciousness that surgical mortality follows a wilfull procedure of the surgeon's own hand must deter him from the performance of radical, dangerous, partial gastrectomy as a primary operation in the surgical treatment of duodenal and most gastric ulcers.

#### ANALYTICAL WORK ESSENTIAL TO RATIONAL SEWAGE DISPOSAL PLANT DESIGN AND OPERATION

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At first thought, it would seem that the title of this paper is merely the statement of a self-evident fact. It is recognized that the process of sewage disposal involves physical, chemical and biological reactions, and therefore it is reasonable to assume that control is as essential to the success of sewage disposal as it is to that of other processes which utilize these reactions. Furthermore, analysis of conditions has always been one of the duties of the engineer in all branches of his profession.

The need of definite knowledge of the strength and character of the particular sewage which we must treat in a given plant, is, indeed, essential and if any further evidence is needed to prove the truth of this statement we have it in the hundreds of sewage disposal plants scattered over the country. It is safe to say that 90 per cent of the sewage disposal plants in cities of 20,000 and under, are not giving results that justify the expenditure of public funds which they represent. This does not mean that the money spent for sewage disposal has been wasted or that the plants cannot be made to give satisfactory results, but it simply means that the degree of purification now accomplished is a

great deal less than that which can reasonably be expected.

These failures, or partial failures, may be explained in a number of ways, but the fact remains that, in the eye of the public, sewage disposal now stands in a more or less discredited position and it is the public to which we must look for the funds for needed improvement. This feeling on the part of the public is in itself enough to challenge the attention of health officers, city officials, and sanitary engineers, since these men realize that adequate sewage disposal is essential to the health of the community.

It is, therefore, well worth while to make a diagnosis of the sewage disposal situation. The designing engineer and the plant operator of today cannot reasonably complain of lack of published data in the art, since this is available in the form of text-books, municipal and state reports, and in the technical press. Information in regard to treatment experience and methods has been given wide distribution through the maintenance of state conferences, and short courses, and through the work of state health departments, engineers and others who work in contact with plant operators.

It is reasonable to ask, therefore, why, when all of this accumulated data is available, do we still have failures. In some instances the answer lies in improper plant design or inferior plant construction, but in the great majority of cases the failure may be laid at the door of stereotyped plant design and stereotyped plant operation. By this is meant the general application of unit sizes or capacities which have been developed by studies at some given point. In the majority of cases, we shall find on careful study that the plants have been designed on sound general principles and are often being operated in accordance with generally accepted rules, but we shall also find that little or no study of the local requirements has been made. In other words, the situation has developed into something like a mail-order business, and success under these conditions is not to be expected, since we know that not all sewages are alike.

If we go back a few years into the history of sewage disposal, we find a similar tendency on the part of American engineers to follow precedent without much regard to local problems. Early in the game, septic tanks and chemical precipitation plants were installed under designs based largely on early English research work, but generally without particular regard to the requirements of the sewage to be treated. Somewhat later, fol-

lowing the studies on sand filters at Lawrence, Mass., we added these filters to the septic tanks, but still ignored the fact that not all sewages are alike. The sprinkling filter followed the sand filter closely in this country and has been applied in many cases with about the same degree of abandon. Early in the twentieth century, the Imhoff tank was introduced into the United States and almost immediately superseded the septic tank, over which it is a marked improvement; but the early installations cannot be called successful, since, previous to about

activated sludge process, as well as the sprinkling filter method, is considered where more complete treatment is required.

Experience in the design and operation of modern plants emphasizes more than ever the necessity of definite information in regard to the quantity and character of the local sewage, and, in addition to this, the public is now demanding that the sewage disposal process be not only more complete, but that it be accomplished in an inoffensive manner.

In order to illustrate the wide variation in sewage flow and sewage strength in various places, the following table is given here:

City	Sewage flow, gallons per cap. per day	5-day B.O.D. p.p.m.	Lbs. B,O.D per cap. per day	Suspended matter p.p.m.	Suspended Matter pounds per cap, per day	Industries	Kind of System
(1) Alliance, Ohio	1.31	92	0.101	152	.167	None	San.
(1) Canton, Ohio	64	213	0.114	$\frac{162}{261}$	.140	Iron and steel	",
(1) Atlanta, Ga. (Peachtree	160	52	0.070	226	.304	Negligible	Combined
(1) " (Intrench)	167	63	0.088	106	.148	","	"
(1) Columbus, Ohio	. 94	190	0.149	206	.162	Starch, dye, tanning,	
						iron, breweries,	"
(1) 731/ 17 7/1-0	0.0	1 5 5	0.115	207	.220	creameries	
(1) Fitchburg, Mass	. 88	155	0.115	297	.220	Paper mills, wool scouring	,,
(1) Lavinotan Vv	. 89	144	0.107	166	.123	Negligible	San.
(1) Lexington, Ky	. ວອ 198	67	0.072	101	.109	","	"
(1) " (Irondequoit)	127	104	0.119	188	.215	*9	Combined
(1) Reading, Pa.	101	118	0.100	145	.123	Dye, Pickling,	Oumainea
(1) 100001116, 1 000001110	101	110	0.100	110	0	tanning and grease	San.
(1) Houston, Tex. (N. side)	. 75	115	0.072	200	.125	Negligible	"
(1) " (S. side)	75	112	0.070	226	.141	-8,,3	27
(1) San Marcos, Tex	. 80	67	0.045	110	.074	None	,,
(1) Sherman, Tex	44	202	0.074	264	.097	33	"
(1) Baltimore, Md.		120	0.106	159	.140	Slaughter houses,	
						dye, drug, soap,	
						breweries	"
(2) Brooklyn, N. Y	102	223		notgiver	1	Industries	"
(2) Chicago, 39th St. Sta.	. 206	106	0.182	22		,,	"
(2) ' (Des Plaines)	. 100	122	0.102	"		Negligible	"
(2) " (Calumet)		64	0.149	"		Industries	"
(3) Parsons, Kansas		338	0.141	319	.133	Creameries	"
(4) Wichita, Ks. (E. side)		170	0.069	330	.093	Domestic	"
(4) " " (Central)		257	0.332	470	.608	Packing plants	"
(4) " (W. side)		168	0.263	320	.501	Industries	"
(4) " (Average)	. 135	223	0.260	420	.469		

(1) U. S. Public Health bulletin No. 132. (2) Illinois State Water Survey bulletin No. 23. (3) Report on sewage analysis, Parsons, Kansas, by Black & Veatch. (4) Report on sewage disposal for Wichita, Kansas, by Black & Veatch.

1915, the proper tank proportions required by American sewage had not become generally known and we were following German practice rather blindly.

The Imhoff tank of today is justly popular, but there are many recent installations the results of which indicate that no particular study of the sewage to be treated has been made. Today, separate sludge digestion tanks share popularity with Imhoff tanks where preliminary treatment is concerned and the

This table is by no means complete and, of course, does not give maximum and minimum figures, but it does show average sewage flows which vary from 44 to 280 gallons per capita daily and sewages which vary in strength (as expressed by B. O. D.) from .069 to .332 pounds per capita daily. Suspended solids as shown in this very limited list, vary from .093 to .608 pounds per capita daily, and it may reasonably be expected that a complete list would show still more variation.

In view of these wide variations, is it odd

that plants designed to handle an assumed flow of a sewage of assumed strength, should give fantastic results? As a matter of fact, is it not exactly what should be expected?

If we realize that the foregoing figures are averages over several weeks and that the sewage at each locality is subject to hourly, daily, and seasonal variations, in addition to any complications that may be interposed by the discharge of industrial waste, it is not surprising that results have not been ideal. In fact, it is rather wonderful that they have not been worse; and when we consider that in less than ten per cent of the plants, are any records of sewage flow or sewage strength kept, our wonder naturally grows.

Recent experience at Wichita, Kansas, is indicative of the effect of analytical work on the plant design. If we leave the relative size of the cities out of the picture, it is evident that the treatment of the sewage of Wichita, which amounts to 136 gallons per capita per day and contains an average of .226 pounds of B. O. D. per capita, is something more of a problem than that of, say, Houston, Texas, which amounts to 75 gallons per capita and contains but .070 pounds of B. O. D. per capita.

In this particular instance, the relatively high strength of the sewage is due to waste from packing houses, oil refineries, and creameries, and in the plant design an allowance of over double the normal per capita capacity was necessary for some parts of the work. At the time these tests were taken in Wichita, the actual population was 106,000 and the industrial load, as determined by special gaugings and analysis, was equivalent to that of an additional 114,000 persons.

The collection of the data necessary for an accurate knowledge of the amount and character of the sewage at Wichita, extended over a year and included, in addition to the usual surveys, the measurement of sewage flow, the analysis of composited samples of city sewage and industrial waste, and a very careful check of the sources of industrial waste.

The plant design includes equipment for sewage measurement and for analysis, for the purpose of maintaining the record started during the preliminary studies. Whether or not this plant will be successful, cannot be foretold at this time, but its operator will at least not have to work in ignorance of the amount and character of the sewage.

Recent experience at Parsons, Kansas, offers an interesting example of what can happen when the sewage develops a character different from that contemplated in the design. An activated sludge plant built here

in 1927, and designed on the basis of actual sewage gaugings, and assumed normal strength, failed to give satisfactory results. Upsets were frequent and the maintenance of a supply of activated sludge was impossible. The sewage was supposed to be domestic in character, but upon careful checking and analysis it was found that two large creameries, which were supposedly selling their buttermilk, were discharging it into the sewers at frequent intervals. By actual test, the organic load from a population of 14,000 persons was found to be the equivalent of the normal load from 46,000 persons. Provision was made at the creameries for drying the excess buttermilk and, since its exclusion from the sewers, the plant has given excellent results. This sounds like a very easy procedure, but, as a matter of fact, the necessary tests and experimental work covered several months and cost in excess of \$3,000, but from the standpoint of economy, it was well worth while, since it kept an investment of approximately \$100,000 from being a loss as far as the disposal of sewage was concerned.

Many instances similar to the foregoing may be cited but they all point toward the general theme of this paper, that is, toward the need of definite data in design and operation. The designing engineer should not only get the physical data required for plant design, but he should also determine the amount of sewage by actual gaugings of sewage flow, and the strength of the sewage by actual analysis.

Similar data should be gathered from time to time by the plant operator, or, if he does not have the equipment, this data should be furnished him by the city through the employment of parties equipped to do the work. The expense of maintaining full-time chemists at the smaller plants is probably prohibitive, but the results at stake certainly warrant enough consulting service to enable the plant operator to have an idea of what kind of sewage he has to treat.

The state, county, or municipal, health officer is not always consulted in the matter of sewage disposal, but, in view of the fact that sewage disposal is definitely related to the health of the community, it should be the duty of the health officer to see that the money spent for sewage disposal is not wasted. This, among other things, means that he should see to it that proposed disposal plants are designed for the particular problem in view and that the operators of these plants are provided with sufficient data to enable them to operate the plants intelligently.

In the case of many plants, this will ordinarily mean a rather detailed study of the local problem. Some industrial wastes may have to be excluded from the sewer system and some alterations or extensions may have to be made at the plant itself, but, after all, a careful diagnosis and a suitable prescription is as important to a sick sewage disposal plant as it is to a sick person.

## CASE OF CHRONIC GALL BLADDER DISEASE

(Case presentation and discussion before the Staff Meeting of St. Joseph's Hospital, Phoenix, Ariz., Feb. 9, 1931).

Case Presentation by Dr. H. D. KETCHERSIDE

Mrs. B., age 60, white, admitted 11:35 a. m. Jan. 16, 1930. Admission diagnosis: cholecystitis, cholelithiasis.

F. H. Father died at 62, cause unknown; was ill four years. Mother died at 78, of cancer. One brother living, 50 years old. One brother died at 39, with dropsy (renal); one sister died at 50, cause unknown; two sisters living and well, at 55 and 53. Patient had seven children, four living, two died in infancy, one at eight years.

infancy, one at eight years.

P. H. Has had asthma for 23 years. Does not remember about infections of childhood. For 15 years has had frequent attacks of pain in epigastrium, at times associated with jaundice and vomiting. For the past year, these attacks have been

eccurring about once a month.

Present Illness: On January 16, 1930, about 1 a. m., was stricken with severe pain in epigastrium, and vomiting. I saw her first about 5 a. m. She was in severe pain and was vomiting almost continuously. I gave a hypo of H. M. C. No. 1, which re'ieved her pain, but this did not stop the vomiting. She was moved to the hospital by ambulance about 11 a. m. She was given 5 per cent glucose in normal saline by proctoclysis, and hot water bottles were placed in the bed. Digitalis M. XXX. She was pale, skin cold and covered with perspiration. The pulse ranged from 120 to 138. Temperature 101°. By the middle of the afternoon, the vomiting had decreased, and the pulse was down around 100, quality good. January 17: Pulse 86, color good, vomiting stopped, patient comfortable.

Physical Examination: Obese elderly white female. Eyes react to light and accommodation, arcus senilis present. Ears, nose and throat normal—no teeth. No enlargement of thyroid. Chest symmetrical, expansion full and equal. No rales, fluid, or consolidation. Heart normal in size and position, sounds of good quality, no murmurs. Abdomen shows rather marked tenderness in entire right quadrant, more marked over gallbladder. No masses noted. Urine showed trace of albumin, 6 to 8 pus cells. Blood: 80 per cent Hg. Leucocytes 13,000.

Polys, 99.

January 18: Highest temperature 100. Highest pulse 90. Entirely comfortable. January 19: Temperature 98.6; pulse 82. January 20: Temperature 98.2; pulse 82.70; coagulation time, 2 minutes.

January 21: Operated. Large thick gallbladder filled with stones. On account of adhesions around gallbladder and thick abdominal wall, gallbladder could not be removed. Stones were removed and gallbladder drained. Operation was done under ethylene gas given by Dr. Carson. Return from surgery in good condition. Pulse 103, good quality. Pulse taken at hourly intervals during afternoon,

ranged from 98° to 104°. At 8 p. m., temperature 99.8; pulse 128; respiration 36. Vomiting bile. Condition remained unchanged during night.

January 22: Condition slightly improved, emesis clear. Temperature 99.6° to 100.6°, pulse 112 to 120. Respiration 26 to 28. About 2 a. m., pulse became rapid and weak—128. Patient became irrational. Digitalin 1/100 every 4 hours was started. Pulse became slower, but weak and irregular. Free drainage from gallbladder. January 23: Condition gradually grew worse and patient expired at 8:40 p. m.

### DISCUSSION by Dr. E. PAYNE PALMER

A careful review of the records of this case reveals that an obese woman, aged 60, entered the hospital January 16th last, with severe pain in the upper abdomen, nauseated, vomiting, high temperature, rapid pulse and and respirations, and in shock. The physical examination gave normal findings except a rather marked tenderness over the entire upper right abdomen, most severe over the gallbladder region. Urine showed a heavy trace of albumin and the blood coagulated in two minutes, leukocytes 13,100, hemoglobin 80 per cent. A diagnosis of chronic cholecystitis, cholelithiasis, and an acute gallstone colic was made. The patient was treated properly and the acute condition subsided. After a sufficient lapse of time and a careful study of her condition, she was prepared for operation. She had been given digitalis in 30 drop doses over a short period. She was given one of the least harmful of inhalation anesthetics by an expert anesthetist. A conservative operation, cholecystostomy, was done, January 21st. She was returned to her room in good condition and remained so until that evening, when there was a sharp rise in pulse rate and respirations, with frequent emesis. She was given glucose 5 per cent and normal saline solution intravenously, and stimulation. Her condition apparently improved for a while but became worse, and she expired the evening of the 23rd.

The records show that the patient had careful examinations and a correct diagnosis, was carefully prepared for operation, was given a safe anesthetic and a conservative operation, but in the end died. Why? Because her operation was delayed too long. The responsibility of her death is not on the men who had to do with her case in this particular illness, but rests upon the shoulders of the physicians who saw her in the early stage of the disease, or upon the patient and her family. The medical profession and the laity must realize that chronic gallbladder and biliary tract pathology are serious conditions. With rare exceptions, these conditions are amenable only to surgical treatment and should be operated upon as soon as the diagnosis is made and the patient is studied to determine his ability to

withstand operation. In cholelithiasis, medical treatment can not cure; it may make the

patient more comfortable.

Chronic inflammatory changes in the gallbladder and biliary passages are frequently accompan'ed by changes in the parenchyma of the liver and pancreas, which not infrequently cause death, or, when operation is done late in the disease, death results because of the damage which has already occurred, as was shown by autopsy and a study of the specimen of the liver which was removed in this case. Cholelithiasis is only a part of a general hepatic disease. In practically every case of cholecystitis, there is an inflammatory process of the liver adjacent to the gallbladder and in chronic and severe cases there is both an interstitial and parenchymatous hepatitis. If there is any place in the body where chronic irritation is apt to produce a carcinoma, it is in the gallbladder and biliary tract, and it occurs only as a resu't of irritation due to gallstones. Procrastination in chronic cholecystitis resu'ts in arthritis, endocarditis, myocarditis, hepatitis, rancreatitis, neoplasms, gangrenous cholecystitis, atrophy of the gallbladder, cystic duct occlusion, common duct obstruction with jaundice, intestinal obstruction, and countless other pathological conditions. In early cases, the operative results are brilliant; in late cases, they are doubtful or hopeless. The mortality in these cases is usually traceable to procrastination.

# CASE REPORT Hypertension and Uremia FELIX P. MILLER, M. D. J. LEIGHTON GREEN, M. D. El Paso, Texas

(Presented at the Staff Meeting of the Masonic Hospi'al, El Paso, Texas, Feb. 1932.)

This case presents a typical picture of terminal illness following prolonged hypothesion and ne-

phritis.

W. A. C., white male, aged 49, school teacher. Was treated in the Beall Clinic, Ft. Worth, Texas, in May, 1931. The clinic reports that he was unconscious and his tongue was injured from being bitten. Blood pr ssure at that time was 175 systolic, 115 diastolic. Systolic and diastolic murmurs were heard at the mitral heart valve, and on inspiration a diastolic murmur at the aortic area. Pulse rate was 84 per minute, regular. Babinski sign was present, bilaterally. Respirations were shallow. Temperature was subnormal. The urine showed a specific gravity of 1.005, with two plus albumin and a few hyaline casts. Blood sugar was found to be 120 mg. per 100 cc. of blood. Nonprotein nitrogen, 40 mg. per 100 cc. Uric acid 8 mg. and creatinine 2 to 3 mg. per 100 cc. of blood. Red blood cells numbered 4,500,000; white blood cells, 13,000; and hemoglobin 90 per cent, with 83 per cent polymorphonuclear leukocytes. The following day, patient was rational, but nonprotein nitrogen remained at 41.4 mg. per 100 cc. and phenolsuphonphthalein test showed 1 hour excretion of 30 per cent; 2 hours, 15 per cent; a total of 45 per cent. Wassermann and Kahn tests

were negative. On the third day only a trace of albumin was found in the urine and no casts. Recovery from this attack was not complete, for the patient was unable to resume his school work.

He was seen by Dr. Felix P. Miller on Nov. 20, 1931. His previous attack, as above described, was diagnosed by the patient as a "light stroke." His blood pressure, he stated, had usually ranged from 165 to 180, but at times had risen to 200 or 240. Family history was irrelevant, except for the fact that his mother died from Bright's disaase and dropsy at the age of 60. He recalled a left retinal hemorrhage at the age of 35, another hemorrhage in the right eye later, with subsequent recovery.

The chief complaint was of occipital headache, and he also complained of edema in the right leg. Blood pressure was 242 systolic, and 150 diastolic, in left arm. In right arm, 258 systolic and 160 diastolic. The heart was found enlarged to the left, and the aorta was wider than normal. Fluoroscopy confirmed these findings. No edema of extremities could be detected. The urine showed albumin two plus, with many fine granular and coarse granular casts, occasional red blood cells, and occasional white blood cells.

Potassium iodide, minims ten t. i. d., was pre-

scribed. Hypertension diet was advised.

On November 28, 1931, the patient was again seen at our office. Blood pressure was 210 systolic, 110 diastolic. He was not seen again until his admission to the Masonic Hospital, El Paso, on December 8, 1931. A history was obtained of malaise on December 5 and 6, headache on December 7, delirium and vomiting on December 8. On admission, patient was semi-comatose, restless, irrational, responding slowly to questioning. Temperature was 97.4°, pulse rate 74, strong and regular. Blood pressure was 250 systolic, 158 diastolic. Arteries were firm, not easily compressed. A soft systolic murmur was heard at the aortic area, other heart sounds were clear. Pupils were dilated, but equal, and reacted well to light and accommodation. No evidence of paralysis was detected, and no abnormal reflexes were elicited. There was no edema. Urine revealed specific gravity of 1.012, with albumin two plus, and a few hyaline casts. Headache was the only complaint, but it scemed severe.

On December 10, examination of the eyegrounds was made by Dr. Bloyce Britton. He reported: (1) marked arteriosclerosis; (2) increased intracranial pressure; (3) optic papillitis, right, with beginning

left.

Spinal puncture was done on December 10. Pressure was 8 mm. of mercury and the fluid was reported normal. Blood pressure dropped to 202 systolic, but on December 11 had risen again to 260. Venesection was resorted to, followed by intravenous injection of 50 per cent glucose. Vasodilators continued to be administered by mouth. Saline purgatives were given freely. The nurse's chief concern was in quieting an extremely restless patient, for which purpose chloral hydrate proved most effective. Pantopon was resorted to on several occasions when the patient became unruly. Blood urea on December 11 registered 50 mg. per 100 cc. of blood. Output of urine became scanty and catheterization was necessary. On December 12, the total recorded output was 360 cc. Diurctin was administered and the output increased to 500 or 700 cc. each day.

During his last conscious hours the patient complained of blurred vision and headache. On December 16, Dr. Britton reported increased papillitis in the right retina, with enormous venous distention and small petechial hemorrhages in the left retina. Spinal fluid on December 15 showed a trace of blood. December 17, a strong systolic blowing murmur was heard at the mitral area, with less mared

systolic murmur at the aortic and pulmonary areas. Blood urea had risen now to 95 mg. per 100 cc. of blood, blood sugar was 145 mg. and creatinine 10 mg. per 100 cc. To the best of my knowledge, the prognosis is invariably fatal when blood creatinine exceeds 5 mg. per 100 cc. of blood. Urine showed

four plus albumin, but no casts,

Blood pressure remained below 100 systolic for the remaining week. The temperature had stayed below 100° during the early part of the illness. On December 16 it rose to 102°, and again, on December 21 to 101°. Pulse and temperature continued to rise, auricular fibrillation developed in spite of administration of digalen, and on December 22 Cheyne-Stokes' breathing was observed. Temperature rose to 103.4° and the patient was apparently moribund. He hung on, however, until December 24, when respirations again became sonorous and irregular, and his heart failed. Unfortunately, permission for autopsy was refused. The final diagnosis was:

(1)Hypertension and arteriosclerosis.

(2)Chronic nephritis. (3)Cerebral edema.

(4) Uremia. Cardiac Dilatation. (5)

#### CASE REPORT

#### J. TRAVIS BENNETT, M. D.

El Paso, Texas (Presented at the Staff Meeting of the Masonic Hospital, El Paso, Texas, Feb. 1932.)

Child, female, age nineteen months. Admitted to the Masonic Hospital, 9:30 a. m., January 6, 1932. Died January 6, 1932, 1:25 p. m.

Family History: Not contributory.

Personal History: In February, 1931, green-stick fracture of the left clavicle, followed in three months by an abscess in the region of the left shoulder, which was open d twice and drained little. Subsequently, two other abscesses developed, one on the left shoulder and one in the left axilla, which drained sav ral weeks, but finally healed. In September, 1931, patient was bitten by a rabid cat on the left hand, for which she received anti-rabic

treatment for twenty-one days. Present Illness: Onset was sudden. Sunday night, January 3, 1932, mother noted she would awaken from her sleep suddenly, as if frightened. Next day she appeared to be in a stupor from which she could be roused. She had fever, temperature reaching 103.5°. At times her jaws became set rigidly, but she was able to swallow and did not froth at the mouth. There was no nausea or vomiting, and the stools were normal. Until the time of admission, her fever remained high, convulsions were frequent, and her condition gradually became worse. Treatment was symptomatic. Patient was seen at home just prior to admission; temperature, 104°. most striking feature was rigidity of the muscles of the jaw (although the mouth could be pried open) and a peculiar apprehensiveness of features when she was approached, amounting almost to terror. She opined hir eyes wide, pupils became dilated, and child began to cry out. When touched, she immediately exhibited a tonic spasm of the voluntary muscles, opisthotenos. A more violent reaction, amounting to a generalized convulsion, was caused by sudden fraure of the neck on any attempt to turn child on either side. Morphine gr. 1/12 (hypo) did not entirely prevent recurrence of convulsions.

Physical Examination: Temperature 106° (ax.) Semi moribund. Slightest stimulus causes generalized tonic spasm of muscles of body. Jaws rigid, but can be pried open. Pupils contracted (morphia), were wide and reacted. Mucous membrane of the mouth dry, reddined; considerable sordes. Slight

stiffness of neck. Heart and lungs negative except for few fine rales at bases following convulsion. Abdomen moderately distended and tympanitic; no rigidity. Three old scarred sinuses in region of left shoulder. Muscles of extremities are tense. Reflexes hyperactive. Babinski not obtained. Tache cerebrale absent. Cerebrospinal fluid clear, under increased pressure, 5 cells.

Diagnosis: (1) Tuberculous meningitis, suspected because of old tuberculosis scars on left shoulder. Onset more sudden than usual and course more stormy. Peculiar apprehensiveness and hyper-irritability of child is against tuberculosis. Elevated temperature is against it. Absence of tache cerebrale is against it. (2) Tetanus; sudden onset and rapid cours with rigidity of jaw muscles and hyper-irritable nervous system, favor tetanus. There was no rigidity of abdominal muscles and no de-

monstrable lesions. (3) Rabies.

Course: Following lumbar puncture, numerous enemata were administered, together with chloral hydrate and sodium bromide and, finally, chloroform by inhalation. Convulsions continued at intervals in spite of sedatives; abdomen became greatly distended and tympanitic, and temperature rose. Throat rapidly filled with mucus, breathing became irregular, and body became livid. Death ensued at 1:25 p. m.

Final Diagnosis: Tetanus.

Dr. Stevenson was of the opinion that it was rabies. He had seen the child at least two days before admission to the hospital. He had been called because the child was having some difficulty in swallowing. He had no trouble in examining the child's throat and found it to be normal. He saw the child again, once or twice, before admission to the hospital. The last time he saw the child, he noticed that she appeared fearful. Examination of throat was made again without any difficulty. Child had a convulsion at this time that was char-

acteristic of rabies.
AUTOPSY REPORT: (Dr. G.o. Turner) body is that of a nineteen-months-old girl child. Nutrition is good. There is a scar at the right anterior margin of the axilla. This scar shows complete healing. There is an open sinus above the left clavicle. This sinus leads to a suppurating supraclavicular gland. The lungs and pleural cavities show nothing abnormal except for a small area in the lower anterior aspect of the right upper lobe. This area of lung tissue is firm and presents a light brown color. Sections show intrestitial fibrosis, together with round cell and polymorphonuclear cell infiltra tion of both the interstitial tissue and the air cells. Many of the air sacs are filled with polys. There is a small area of interstitial pneumonia. The heart is normal. The thymus is rather large. The liver, intestine, stomach, spleen and kidneys show nothing abnormal. The brain shows possibly slight congestion. The pineal body is a little large and irreguliar but its microscopic structure is normal. There is no evidence of Negri bodies in the brain. It is my opinion that death came from tetanus. There is no evidence to show that other type of infection existed.

#### CASE OF SEPTICEMIA FOLLOWING RE-MOVAL OF GANGRENOUS APPENDIX IN A DIABETIC

J. D. HAMER, M. D. Phoenix, Arizona

(Presented before Staff Meeting of St. Joseph's Hospital, Phoenix, Ariz.)

CASE 18418.

Personal History: The case of a male, age 57, retired meat packer, who entered the hospital December 10th last, and expired December 28th. The

patient entered the hospital at 2:15 p. m., Dec. 10, after being sick since the night before. He, on the night of Dec. 9, was attending a dinner at a local hotel, and ate a very heavy dinner. About ten o'clock he began having cramps in the abdomen, chiefly in the epigastric region, and within a short time was nauseated, and vomited several times before the next morning. Two enemata were given that night without relief, and the patient stated that within a few hours he felt very ill, suffered chilly sensations, backache, headache, and violent cramping the abdomen collicity in nature, and returned in the abdomen, colicky in nature, and not relieved by remedies used in the hotel. The physician was not called until the following noon and, although the patient admitted that he should have listened to the advice of his wife to summon aid during the night and the next morning, yet he did not yield until late on the morning of Dec. 10.

Family History: Patient married for many years Wife's heart had always been good, except that she suffered an operation at one time that caused her to be sterile. Father had died at age of 64, from complications attending a fractured hip. Mother deceased, age and cause unknown. Patient had three brothers, two of whom had died between the ages of 50 and 60, one from cardiac failure attending hyper ension, and the other from apoplexy; and the third brother had did of typhoid fever. The patient hinted at the fact that there had been a long history of early age deaths, on the father's side of the family, from high blood pressure.

Past History: The patient acknowledged after considerable questioning that he had had a similar but less severe attack of the same illness about six months ago, and that he had refused operation at that time, although advised to have one. For the past two years, the general health had not been so good, but no especial attention had been given to this fact, although he had been asked on numerous cccasions to seek medical examination and advice, by the wife. For so many years he had been exceedingly robust and well, and he rather felt that nothing could happen to him. He had always been a very heavy meat eater. However, as stated, the last two years had seen a considerable change in the physical condition, the wegitt had dropped from 235 lbs. to 185 lbs., he had noticed occasional dizzy spells, and throbbing sensations of the head at times, occasional headaches, some loss of strength. Two months ago he did visit a physician, and, after a slight amount of study, was told that he had diabetes, and was given advice about eliminating the sugar-containing substances from his menu. advice, in g neral, was ignored, except that he had taken regularly a proprietary medicine for his di-

Physical Examination: The patient when first seen appeared to be acutely ill, with a temperature of 100.6°, pulse 108, regular but weak in volume, blood pressure 146 79, respirations 28, regular, but rather short and grunty in the expiratory phase. There was an odor of acetone on the breath, the nutrition was fairly good, the skin dry, and the body, in general, appearing dehydrated. Examination of the head showed a partial frontal and vertex alopecia; dull, listless expression of the eves; an erythematous hue to the cheeks; dry parched lips and tongue; and teeth showing very poor care. The neck was normal. Chest was huge in all dimensions, and the lung fields clear. The heart was slightly enlarged, especially the left ventricle, the border extending 1/2 cm. beyond the nipple line, and the apex was under the sixth rib.

Heart action was regular, but the tones were weak. The aortic second sound was somewhat accentuated, and had almost a typical tympanitic pitch. No murmurs could be heard. There was a slight degree of atheromatous change in the caliber of the arteries of the forearm. The abdomen was

not distended, nor rigid in any portion, but upon deep pressure, tenderness could be located about Mc-Burney's point. No tumor masses, nor enlarged viscerae were palpable. The G. U. system externally was negative, as were the extremities and nervous

Preoperative Care: Urine analysis taken before operation showed 2.5 per cent sugar, granular casts, hyaline casts, a high concentration of the urine, albumin and acetone bodies. White cell count was 19,700, with 92 per cent polys. The patient entered the hospital at 2:15 p. m., and about 2:30, as preparations were being made to give him intravenous fluids and insulin, he was seized by a severe chill, which lasted 30 minutes. This chill was about 2

hours before he was operated on.

Operation: At operation, a densely adherent. large, bulbous type gangrenous appendix was found deeply buried close to the spine behind the cecum, and containing large fecalith. The appendix mesentery was purplish-red in color, and portions of it app ared almost gangrenous. There was no purulent material observed outside the appendix, but there was a small amount of serous exudate free in the abdominal cavity. An intravenous solution of glucose and saline, together with 4 units of insulin were given while the patient was on the table.

Ethylene anesthetic used.

Postoperative Notes: The first postoperative night was satisfactory, and the next day the patient appeared bright and apparently was doing nicely, but after that, due to the changes and turn of events as hereafter described, it was a battle for life. Sensing possibly that a battle would be on, orders were left for a daily blood sugar, complete urinalysis. blood chemistry of the nonprotein nitrogen products, blood grouping, and blood culture; and fluids were given in large quantities by vein. Insulin was given daily to cover most of the excess of blood sugar, although during the course of his illness, it was most difficult to calculate in advance what would be needed, because of the difficulties encountered in properly fixing and forcing a diet. Rather extensive progress notes were made on this case, so I will quota from them in an attempt to trace the pestoperative course.

Dec. 11. Condition quite satisfactory this morning. Patient states he feels very good. Trace albumin in urine, with granular casts. Blood sugar .22 per cent.

Dec. 12. Patient had two chills today, with a rise in temperature and a delirious condition tonight. The kidneys are not excreting properly. An examination for signs of septicemia: not found. Condition definitely worse. Urea 3.6 per cent, heavy trace of albumin, sp. gr. 1.030. Total solids 71.6. Blood sugar .20 per cent. Intravenous glucose and saline and insulin 4U., given at noon. Concentrated magnesium sulphate given during night, one ampule every 2 hours for 4 doses. U 10 of insulin was given during the night, and heart stimulants were hegun.

Dec. 13. Patient had severe chill at 3:45 a. m. Pulse dropped suddenly to 60 at 9:00 a.m. Patient had a poor night, and condition is very bad. Sugar in urine negative. Blood sugar .18 per cent. Urea increased .2 per cent over yesterday, but the kidneys apparently are functioning better. Heart action is irregular and varies at times in strength and volume. Highest temperature 102.4°: pulse 120, highest. Blood culture after 24 hours shows no growth.

Dec. 14. Condition not improving satisfactorily. Blcod urea increased to 4.5 per cent; total solids 91.2. Blood sugar .17 per cent. Patient had a severe chill this evening, lasting 20 minutes, with rise in temperature and pulse following. Diuretics and stimulants given at intervals.

Dec. 15. Condition shows no improvement. Pa-

tient still chilling at irregular intervals, but has had no prolonged chill today. The laboratory reports a positive blood culture of undetermined type this morning. Patient was transfused 500 cc. of blood today. Urea 4.5 per cent. Total solids 91 per cent. No casts, heavy trace albumin. No acetone bodies, in urine

Dec. 16. Condition not improving. No apparent reaction to the transfusion. A streptococcus strain was cultured after 72 hours and identified after 96 hours, in the blood culture. Prognosis in this case is not favorable. Patient had another severe chill this morning. Albumin positive. Sugar in blood .25 per cent. Urea 4 per cent. A blood creatinin showed 1.95 per cent. W. B. C., 9,700. Polys 88 per cent; monos 12 per cent. Doses of streptococcus serum begun.

Dcc. 18. Temperature tonight is lower, and there seems a slight improvement in the general condition. 400 cc. of blood was given this afternoon by transfusion. Patient has not had chill now for 36 hours. Blood sugar up to .25 per cent today. Albumin pos-

itive, and urea was 5 per cent, no casts.

Dec. 19. Blood sugar .15 per cent. Urine output is fairly satisfactory, with no impending signs of uremia. During last 18 hours, up to tonight, patient had two severe chills, at which time condition of heart was very bad; its action was not so strong, and more rapid. At times the circulation is poor, the lower extremities cold and bluish in spots. The prognosis is certainly not favorable. A slight roughening and prolongation of the first sound over the apex was heard today, suggesting the onset of a valvulitis. Urea dropped .5 per cent today.

Dcc. 20. Patient has had a very poor day, with rapid, uncertain heart action, and tendency to restlessness. Sclerae of eyes, and body are becoming jaundiced. The incision is draining small amount of foul-smelling serosanguineous material. No rigidity of the abdomen, but considerable difficulty is encountered with distention. Blood sugar .22 per

cent. Urea 4.5 per cent.

Dec. 21. Condition is grave. Patient has had a bad day, restless, mentally cloudy, dyspneic, and jaundiced. Had another chill early this morning, also a severe sinking spell about 7:00 a.m. Blood sugar .29 per cent. Intake and output not so good today. Patient struggles on trying to take nourishment. Bowels are badly distended, with very little results with treatment.

Dec. 22. Patient irrational the whole day, with irregular breathing. Pulse has been weak and irregular all day, and tonight there is Cheyne-Stokes's respiration.

Dec. 23. Patient, in general, has had a slightly better day. Temperature has not gone up so high, pulse has stayed better quality, but the abdomen has been distended in spite of intensive treatment. Transfusion of blood given today. Urine shows a drop of urea to 2.5 per cent. Blood sugar .28 per cent.

Dec. 24. Pulse and respirations are up again tonight, and patient is moderately irrational. The distention is much less after an all-night battle. Blood sugar .29 per cent. Patient continues on heart stimulation at regular intervals. Insulin is being given daily. Blood urea 2 per cent

given daily. Blood urea 2 per cent.

Dec. 25. The abdomen distends frequently in spite of free movements and stupes. Patient had a more quiet day, with less variation in pulse and

temperature.

Dec. 27. No improvement can be noted in condition. Patient is restless, irrational, and fails to take nourishment by mouth. Hypodermoclysis and blood transfusion given today. Blood count showed Hb. 65 per cent; R. B. C. 4,088,000; W. B. C. 17,500. Urine shows albumin, pus cells, no casts. Blood sugar .28 per cent. No signs of pneumonia, after daily examinations of the chest, has ever been found.

Blood culture taken on Dec. 25, showed no growth

Dec. 28. Condition this morning is grave. Pulse is rapid, irregular, and weak. Breathing is dyspneic, with considerable mucus in trachea and moisture in lung bases. The body is cyanotic, with purpuric spots on legs and chest. Assisted by stimulation, patient continued to live until 10:30 p.m. Wife refused permission for us to do anything further during the day.

#### COMMENTS

Obviously, this patient was a poor surgical risk. The presence of diabetes alone would have made him so, but we felt that we could control that feature of the case. It is true, too, that the kidneys were not good in the capacity for doing their particular work, but after four or five days, with intensive treatment, they gave us no especial alarm. What was the cause of this man's death? I believe that he was stricken with a fulminating streptococcus infection of the appendix, with rapid development of gangrene, with extension of the process of bacterial invasion of the lymphatics into the mesentery, and possibly producing septic thrombi in the vessels of that region, with the result that septic emboli were thrown off into this man's blood stream even before he was brought to surgery, as evidenced by the severe chill which he had that afternoon. The emboli continued to invade the general circulation from time to time during his attempted convalescence. The septic process also continued locally as evidenced by the appearance of the characteristic foul-smelling incisional discharge. Certainly, the positive blood culture, and the evidences of endocarditis, the jaundiced condition, the septic type of temperature, would prove a widely disseminated infection of the system. Probably the strain of streptococcus employed did not have the capacity of rapid growth and development, as evidenced by the length of time in culture before demonstration and by the length of time this man lived. Gangrene of the appendix probably would not have developed quite so quickly, had it not been for the fact that a very large fecalith was found lodged at the junction of the appendix with the cecum, thereby occluding drainage and permitting an accumulation of the inflammatory exudate. I am very sorry that I was not able to get an autopsy on this case, but, in spite of a plea, permission was not granted.

## DISCUSSION S. I. BLOOMHARDT, M. D. Phoenix, Arizona

The discussion of a case history with a diagnosis of gangrenous appendix, diabetes, nephritis, streptococcic septicemia, acute endocarditis, acute hepatitis, and other sequelae, is a huge task and a difficult one Certain it is, a patient with all these numer-

ous pathological conditions, a host to one of our worst bacterial enemies, the streptococcus, had a right to die, and it is only due to the splendid treatment, the careful nursing, and some of our advanced and modern treatments, that he lived for the period of days which he did live, and it makes me wonder, with such a rapid advance and improvement in medical and surgical treatment, our great research laboratories and clinical study, in future years and, perhaps, not too far off, are we going to be able to patch up such cases and make them useful again? It is a pleasant thought to dream of and strive for. Let us take, for example, the question of diabetes and surgery, which I will divide into the pre-insulin and post-insulin periods. In the pre-insulin period, the post-operative complications were so grave and the mortality so high that only operations of absolute necessity were attempted. A mortality of 30 to 45 per cent was the average in the pre-insulin days, and between 60 and 85 per cent of these deaths were due to coma, which is now, under proper treatment, preventable, and the surgical mortality since the addition of insulin has been so reduced that some enthusiasts feel the operative procedures in the diabetic are as safe as in the non-diabetics of similar age and physical status. The average mortality at the present time is 12.7 per cent.

As far back as 1910, Mayo Robson referred to relationship of infections of the gall-bladder and the production of diabetes, and said that diabetes might be averted by the early removal of the gallbladder, and this, I believe, is generally accepted today. Perhaps other local infections have a similar bearing—certainly, other local infections are known factors in exaggerating an already present diabetic condition. So, when possible, the local infection should always be removed.

To return to the acute gangrenous appendix: it should have been removed six months previously. In this case, the patient was advised to have it removed and would not consent to operation, so the physicians are in the clear. The seriousness of appendicitis as a professional problem is indicated by recently collected figures from the Bureau of Vital Statistics, which show that 25,000 people die annually in the United States from the acute form. The mortality rate from the acute appendix which has not ruptured or which has not an accompanying mesenteriolitis, is very small.

In regard to this type of case, just reviewed, a large amount of progressive study is being done, and these studies lean toward the thought that inflammations of the appendix are constantly being paralleled by changes

in the course and character of the blood vessels and that mesenteriolitis, beginning as a collateral involvement, may later constitute an infection independent of the original appendicitis. First, we have hyperemia, edema, and early damage to the blood-vessel wall; at a more advanced stage, lymphangitis and lymphadenitis, and pus formation. If the infection does not subside, we have infection of the mesenteric vessels interfering with the blood supply to the appendix and naturally leading to gangrene. Next, are ascending septic thrombosis, leading to pylephlebitis and multiple hepatic abscess. Of the microorganisms in this type of case, again the streptococci seems to play the main role. Complications in the mesenteriolum may arise even after the appendix has been removed. Some of our best men are advocating a ligation and resection of the ileocolic vein as a routine measure in this type of appendix. If diagnosis is made before operation, the ligation is made before removal of appendix. The procedure is a difficult one but certainly an advance for the betterment of patient and our own mental welfare, because, if there is a grey hair producer among us, such appendix cases seem to be very near the lead.

In summary of this brief discussion: In trying to keep abreast of this rapid, progressive, scientific age—by many called the jazz age, but, even with such a name, I think, a progressive age—we have made a wonderful advance in the control of diabetes and, as is shown in this particular case, with the insulin treatment of diabetes accompanied by surgery. With the study and relationship of the streptococci to nephritis—although we do not know the exact relationship—even so, we are removing the diseased streptococcic focal infections; we have a useful serum for scarlatina that great forerunner of nephritis, and a general anti-streptococcic serum which we are sure will lessen our damaged kidneys. In regard to diseased appendices, the practitioner and the surgeon are diagnosing and operating them earlier, so that we do not have so many gangrenous ones and, consequently, not so many mesenteriolitis, pylephlebitis and hepatic abscess cases and not so many of general peritonitis. If we do not get in the belly soon enough and the patient has appendicitis, plus chills, we recognize definite mesenteriolitis, and our teachers and men of great experience tell us to ligate the ileocolic vein, and if this is possible, the mortality rate drops, because it does not permit the infection to ascend to the portal system and liver.

It would seem that the mistake this patient made was a refusal of operation six

months previous, when he had the symptoms of acute appendicitis and refused to have the appendix removed. Possibly, at that time, he had a streptococcus infection of the appendix and this, in some respects, may account for this nephritis. The role of the streptococci in the etiology of acute and subacute bacterial nephritis cannot be denied. From the work of the Dicks and many others, we now appreciate the specific relation of the streptococci to acute and subacute glomerulonephritis. It is still in doubt as to the manner in which the streptococci produce the lesion. It is well known that the renal impairment does not usually appear when the streptoccic infection is most acute, but in the subsiding stages, possibly due to an intermediary product. We are making advances in the control of the streptococcus and, naturally, we are going to expect to find, as time goes on, many less damaged kidneys.

#### CASE REPORT JOHN A. HARDY, M. D. El Paso, Texas

(Presented at the Staff Meeting of the Masonic Hospital, El Paso, Texas, Feb. 1932.)

Patient gave the history of having been suddenly taken ill with acute pain in the upper abdomen, accompanied by nausea and vomiting. She also complained of dizziness. The pain persisted and grew in severity, so that about an hour later I was consulted. At the time I saw patient, she was definitely in shock. Because of the extreme tenderness and rigidity in each fornix, nothing definite could be outlined by vaginal examination except a large tumor that extended from the pubis to the umbilicus. Patient had noticed an enlargement of her abdomen about four years ago; at that time she noticed some backache and abdominal discomfort. About three years ago, she had her first attack of abdominal pain accomanied by nausea and vomiting, which she termed "acute indigestion." Since that time, she has had several similar attacks. Her abdomen has gradually increased in size. About two years ago, x-rays were taken of her abdomen and a tumor was found at that time. (Patient does not know the location of the tumor.) Her menstrual periods have been regular. She has had no fever. No frequency or burning on urination.

On admission, patient was given 450 cc. of normal saline and glucose 5 per cent intravenously, and she was taken to the operating room. A diagnosis of (1) ovarian cyst with a twisted pedicle; (2) degenerative uterine fibroid, was made.

On opening the abdominal cavity, a large quantity of fresh blood and blood clots were found. The source of the hemorrhage was found to be from a ruptured varicose vein on the outside of one of the fibroids. There were from four to five fibroids, varying in size, attached to the uterus. The appendix was also found to be acutely inflamed. A supravaginal hysterectomy and appendectomy was done. Patient's postoperative condition uneventful.

Postoperative Diagnosis: Multiple uterine fibroids.

#### HEART SYMPTOMS IN A SYPHILITIC (Diagnostic Discussions)

J. D. HAMER, M. D., H. D. KETCHERSIDE, M. D.,

Phoenix, Arizona

(Discussions of Case No. 13371, Case Records of the Massachusetts General Hospital, from Boston M. & S. Jour., Sept. 15, 1927, page 437).

#### CASE HISTORY

A bricklayer fifty-seven years old came to the hospital seven years ago. A large lipoma was removed from the midscapular region. He made an uneventful recovery and was discharged in nine days. He gave a history at that time of hacking cough, especially in cold weather, some dyspnea on exertion, syphilis twenty years previously with treatment at intervals since that time, and "rheumatism" five years previously. On examination a rough systolic murmur was heard over the pre-cordia, best heard at the aortic area but fairly well heard in the midaxillary line and just audible over the left back; also a presystolic rumble, best heard at the acrtic area. Dr. White noted that the heart and great vessels were enlarged.

The patient was treated for the next six months in the Out-Patient South Medical Department. His

Wassermann was strongly positive.

January 27, seven years after his first entry, he was readmitted. Since his first admission he had been under treatment by a syphilologist. He now said his dyspnea on exertion was of ten years' duration. He had noticed no increase. He had not followed the advice given him at the hospital to obtain lighter work. Occasionally he had some dizziness, and at times, generally at night, palpitation. He had had no edema. His left leg had been swollen thirty years as a result of an accident. For the past year he had had increasing nycturia and some frequency during the day, especially when he was working. Nine months before admission the dyspnea became worse and he also had a sense of severe pressure over the heart and lower chest on exertion, taking his breath away, stopping with rest and leaving him rather weak. It took him nine days to do the work he formerly did in two. After three weeks' rest he was able to work again at a more moderate rate, and had little trouble except from dyspnea and pain until two weeks before his readmission. Then he found himself too weak and dyspneic to work. He found he needed two pillows at night. The weakness and dyspnea continued in spite of rest. During the past two weeks his feet had been swollen during the day, especially the right, and his right

He gave a family history of fatal tuberculosis in three sisters and one brother. The patient was a moderate drinker. He now gave a history of gonorrhea at the same time that he had syphilitic infec-

Clinical examination showed a very obese, cyaclinical examination showed a very obese, cyanotic, orthopneic and dyspneic man sitting up in bed. Perforated nasal septum. Tongue very dry, with atrophied papillae. Pulsation seen on both sides of the neck. The whole precordium heaved. Apex impulse of the heart in the sixth space 15.5 centimeters to the left of midsternum, right border 7.5 centimeters to the right, supracardiac dullness in the second space 6 centimeters to the left, 3 to the right. At the apex and transmitted into the axilla and up over the lower part of the precordium were loud harsh systolic and diastolic murmurs in immediate succession. The systolic had a very intense musical quality and was heard in the right axilla as well as in the left. At the aortic area were extremely loud systolic and diastolic murmurs replacing the heart sounds, transmitted into the neck (Continued on page 138)

#### DIABETIC COMA

J. M. PEARSON, M. D. Glendale, Ariona

(Comments in connection with review of deaths at Good Samaritan Hospital, Phoenix, Arizona, at the December, 1931, Staff Meeting of this hospital).

During November there occurred seven deaths in this hospital. There was one autopsy performed.

Case 12635, female, age 58. Cause of death, arteriosclerotic heart disease with failure, cerebral arteriosclerosis with depression. No note-worthy features.

Case 12460 and 12747, patient being in hospital for two different periods. Female, age 44. Cause of death, bronchial asthma, allergic in type. Physical findings showed no pathology other than the usual pulmonary evidence of asthma, no cardio-vascular changes. The treatment by means of twice-cooked and strained vegetables, twice-cooked cereals, condensed milk and Karo syrup, brings to mind the fact that many students of nutrition are mentioning in their writings the possibility of the development of a state of "avitaminosis" with resultant lowering of the patient's powers of resist-This condition has been found to occur at times during the treatment of epilepsy by means of the ketogenic diet, also during the prolonged treatment of peptic ulcer by means of twice-cooked gruels, and in other diseased states that are themselves amenable to dietary measures. The current literature contains several articles on the increasing prevalence of pellagra and there is every reason to believe that minor degrees of deficiency diseases are frequently present along with other pathology which holds the center of the stage and excludes other possibilities from the mind of the medical attendant.

Case 12587, male, age 34. Case of far-advanced pulmonary tuberculosis; history and physical examination well written up, progress notes frequent, consultation properly recorded at time of examination.

Case 12500, female, age 41. First admission August 4th, for cholecystitis, relieved by cholecystectomy. Re-admitted in October with a diagnosis of hydronephrosis. November 2, nephrectomy was performed, but patient persistently failed in strength and died, Nov. 11, of exhaustion.

Case 12745, male, age not given. Case of fracturedislocation of the fourth cervical vertebra, with resultant compression of the cord and death in 24 hours after the receipt of the injury. Autopsy.

Case 12720, male, age 22. Cause of death, severe electric shock and burns with toxemia; death in four days after admission.

Case 12810, male, age 14, admitted in diabetic coma. History was typical, polyuria, polyphagia, loss in weight, sudden onset of stomach ache, vomiting, and weakness. Stupor, delirium, Kussmaul breathing and soft eyeballs now became apparent. In other words, the boy entered the hospital with the diagnosis of diabetic coma written across his face in large type. No one can dispute the fact that here was a terribly ill boy, but the fact seems to have been recognized only after the boy had been in the house forty-eight hours, when a consultant was called and vigorous treatment was instituted.

The boy was admitted at 12:45 p. m. He received his first dose of insulin at eight-thirty that night and, though 40 units were ordered, only twenty were given. During his first twenty-four hours in the hospital, he received forty units of insulin in spite of the fact that his blood sugar revealed the startling figure .88 per cent and the urinary sugar

1.3 per cent, with acetone present. The second day he received more insulin (85 units) and the third day still more (120 units). Dehydration was treated by proctoclysis and hypodermoclysis, but the blood sugar was never lower than .33 per cent, nor the urinary sugar lower than 1 per cent, at times being as high as 4 per cent.

as high as 4 per cent.

Our Historian has been kind enough to gather the record of cases of diabetic coma admitted to this hospital during the past three years. Prepare for a shock when I record the humiliating fact that, out of nine cases admitted, eight have died. Shall we ascribe this fact to impotence on the part of insulin to control these cases? Most emphatically, No! At the New England Hospital, since 1923 Joslin reports 170 cases, with 13 per cent mortality. St. Luke's Hospital, New York City, treated 163 cases in 1923-1924, with a mortality of only 7 per cent.

Authorities are agreed on the fact that every case of diabetic coma constitutes an emergency of the gravest nature. Would one treat a case of ruptured ectopic pregnancy or a ruptured peptic ulcer in a dilatory manner? If we are to lower our mortality in this grave condition, one thing is essential. Every man who undertakes the treatment of such a case must realize that only by immediate and heroic measures can the patient be saved. Neither is it a one-man job, but there must be coordinated effort with visiting physician, house man, laboratory worker, and nurse, all working to save the patient's life, which, it must be kept in mind, is hanging by the merest thread.

Giving forty units insulin in the first twentyfour hours in such a severe case as this one, is comparable to giving five drops of tincture digitalis
every four hours when digitalization of a patient
is required. Gray and Sansum report a case of
coma in which the blood sugar reached .9 per cent,
with recovery. During the first sixteen hours 630
units of insulin were given, 560 being given in the
first eight hours. Insulin was administered every
fifteen minutes and the blood sugar determined
every two hours. Joslin mentions a case of a boy
14 years of age who required 740 units in 24 hours.
It may be argued that these men are specialists in
this line. True, but no special technical skill is
needed to give adequate dosage, for the blood sugar
and urinary sugar are safe guides in prevention of
overdosing.

While diabetes is undoubtedly a more difficult disease to treat in the young, not so with diabetic coma, for Joslin gives the mortality in 170 cases by decades. The first decade showed no mortality, the second showed 3 per cent mortality, with the highest in the sixth decade, with 43 per cent. Joslin stresses the value of necropsies in such deaths, as he has had two cases in which death was proved to be due to suppurative pancreatitis. Without such information, one might be inclined to lose faith in insulin in the treatment of diabetic coma. Inasmuch as occasional cases recover with small amounts of insulin, Joslin prefers to administer 20 to 40 units at intervals of fifteen minutes to one hour. As the blood sugar and urinary sugar approach lower levels, interval between doses is increased.

Besides adequate insulin dosage, other valuable measures include conserving body heat, treating dehydration, lavage of the stomach, emptying the colon, and support of the heart. Sodium caffeine benzoate is the most popular remedy for the latter purpose, but, though Joslin formerly used it freely, he now is more cautious, due to the fact that it has been shown that this drug produces a rapid loss of glycogen from the heart muscle and, naturally, the safety of the heart deserves great consideration in such an up-hill battle for life.

Allow me to close these random remarks with two

short quotations, the first from the pen of that master of diabetic teaching, Joslin: "Eternal vigilance and simultaneous observations by the bedside and in the laboratory, day and night, alone can save

the patient in diabetic coma."

Frederick M. Allen, another master in this field, states: "If all skilled surgeons in this country were suddenly eliminated and all operations were to be performed by physicians with no previous special training in surgery, there would be a rise in the surgical death rate, but this rise would be insignificant in comparison with the enormous number of present-day diabetic deaths which could be prevented by sufficient skill on the part of the attending physician."

#### PUBLIC HEALTH NOTES

J. ROSSLYN EARP, M. D., Dr. P. H. Director New Mexico State Bureau of Public Health

AGE INCIDENCE OF TYPHOID FEVER

The question has been raised in correspondence with the the New Mexico Bureau of Public Health as to whether young children are susceptible to the infection of B. typhosus. Some of the textbooks seem to regard typhoid fever in young children as a rare curiosity; others admit its possibility but emphasize its atypical aspect. I have decided that readers of Southwestern Medicine will be interested in the three age distributions given below, two being taken from recent epidemics and the third from the annual endemic incidence of typhoid in the state of Illinois.

Age Incidence of Typhoid Fever

Ages	Dlean, N. Y. 1928	Salisbury, Md., 1930	Ilinois 1930
0-4	11	10	9
5-9	19	15	9
10-14	31	11	11
15-19	30	9	28
20-24	30	12	18
25-29	30		8
30-34	22	9	12
35-39	18	0	6
40-44	15	8	7
45-49	13	3	7
50-54	17	1	9
55-59	4	3	9 3 8
60 & over	8		8

The Olean epidemic was water borne. The epidemic in Salisbury being a milk borne epidemic shows a higher proportion of cases in the early age groups. In neither of these epidemics have we the incidence by years for the first five years of life. In the case of Illinois the incidence is one under one year, one at one year, two at two years and five at three years of age. It is clear from each of these experiences that the child under five years old does run a risk of infection.

TYPHOID IMMUNIZATION

Dr. Dean's excellent account of the epidemic at Olean' gives not only the age dis-

tribution quoted above but also another age distribution showing the time lost from school as a result of inoculations with typhoid vaccine. Expressed as days lost per 100 pupils immunized the figures are as follows:

At	age	4	days	lost	15.6
		5-9			27.0
		10-14			29.3
		15 & ove	r		36.7

Taking all the 3,151 pupils together, 32.5 school days were lost and of these, 13.4 days were due to sore arms, 9.9 to headaches, 8.1 to general reactions and 1.1 to other causes. It is evident that down to the age of four years the younger the subject inoculated the less likely is there to be a resulting reaction.

For fifteen years now I have been following with interest the various essays to induce immunity by oral administration of typhoid vaccine. Fifteen years ago all my bacteriologist friends scoffed at the idea. But since then the publication in English of Besredka's work has made the method theoretically respectable, whether Besredka's theory of local immunity be ultimately acceptable or not. The results obtained, in so far as they can be measured by statistics, seem to be just as satisfactory when the vaccine is given by mouth as when it is given beneath the skin. Dr. Lloyd Arnold, Professor of Bacteriology in the University of Illinois, gives the following technic2: "Upon rising in the morning take two capsules followed by a glass of hot water (each capsule contains half a gram of dried bile). After thirty minutes take one cubic centimeter (1 c. c.) of typhoid vaccine in half a glass of warm water. Repeat on two succeeding mornings. Three doses altogether."

Using this method he finds that 68 per cent of those vaccinated develop a positive Widal reaction two to three weeks after oral vaccination. Chavarria and Zuloaga' have now published comparative charts showing qualitatively the development of specific agglutinins after subcutaneous and oral vaccination respectively. The authors recognize that the development of agglutinins is not correlated absolutely with the development of immunity. But so far as their experiments go the oral method is completely vindicated. Sceptics may borrow from us the journal containing their report and will find therein an excellent editorial discussing the subject more fully than is possible in these notes.

- (1) Dean, A. S.: The Olean City Epidemic of Typhoid Fever in 1928. American Journal of Public Health 21;390 (April) 1931.
  - (2) Illinois Health Quarterly, October, 1930.
- (3) Chavarria, A. P. and Zuloaga, R. G.: Vacunacion Antitifica por la Via Oral. Boletin de la Oficina Sanitaria Panamericana 10, 1563. (Dec.) 1931.

## Southwestern Medicine

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## ARIZONA STATE MEDICAL ASSOCIATION

Annual Meeting at Globe, April 21, 22 and 23

Forty years ago, in the year 1882, the Arizona Territorial Medical Association was organized in Phoenix, fostered by the Maricopa County Medical Society whose organization preceded that of the territorial society by several months.

The fortieth annual session will be held in Globe, under the auspices of the Gila County Medical Society, the dates selected being April 21, 22 and 23. The Gila County Medical Society has been hard hit by the closing of the Old Dominion hospital department, and by the exodus of several of their members. However, those left figure that they will have plenty of time to organize a good meeting and to entertain the Association in their usual hearty style. Dr. Clarence Gunter, the president-elect, with Dr. D. F. Harbridge and Dr. W. A. Holt, have organized a good program of papers. The list includes the following:

"Treatment of Spontaneous Pneumothorax," by Dr. Howell Randolph, Phoenix, Arizona.

"Statistical Report on Gall Bladder Operations at the Los Angeles General Hospital During the Past Six Years," by Dr. Harlan Shoemaker, Los Angeles.

"Urethral Methods for the Relief of Prostatic Obstructions; History and Present Status," by Dr. David M. Davis, Phoenix.

"Gas Gangrene; Its Causes and Treatment," by Dr. Hal W. Rice, Morenci, Ariz.

"The Neutrophile Leucocyte," by Dr. Harlan P. Mills, Phoenix.

"House Dust as an Etio'ogical Factor in Asthma,' by Dr. E. A. Gatterdam, Phoenix. "Digitalis Therapy", by Dr. W. C. Cain,

Yuma, Ariz.
"Spinal Anesthesia," (illustrated by a 16

mm. motion picture film), by Dr. E. W. Adamson, Douglas, Ariz.

"Rupture of the Pregnant Uterus in Trial Labor, Previous Cesarian Scar Intact; Report of a Case," by Dr. C. E. Yount, Prescott, Ariz.

"Immunization Against Typhoid Fever," by Dr. M. S. Gaede, Jerome, Ariz.

"Injection Surgery," by Dr. N. J. Kil-

tourne, Los Angeles.

"Cancer of the Rectum," (with remarks upon permanent colostomy and the details of its proper care to insure the comfort of the patient) by Dr. Dudley Smith, San Francisco, Calif.

"Advances in the Diagnosis and Treatment of Sinusitis," by Dr. D. R. Gaskins, Phoenix.

"For the Good of the Arizona Medical Profession," by Dr. B. M. Berger, Phoenix.

A paper on some phase of Arthritis will be presented by Dr. Paul Holbrook, of The Desert Sanatorium, Tucson, Ariz.

A motion picture showing some operation in the specialty of urology will be presented by Dr. W. G. Shultz, of Tucson, Ariz.

"Treatment of Burns" will be the title of a paper by Dr. N. C. Bledsoe, of Tucson, Ariz.

"Cancer" will be the subject of a paper to be presented by Dr. George Ray Stevenson of San Diego, Calif.

"Problems and Management of Gall Bladder Disease," by Dr. A. P. Kimball, of Yuma, Ariz.

A paper, whose subject has not yet been given, will be read by Dr. C. A. Eaton, of Yuma, Ariz.

Mr. Burt Clingan, of the Arizona Industrial Commission, will speak to the Association on the subject of "Industrial Surgery." This is a very pertinent subject just at present.

The headquarters will be at the Dominion Hotel which has been the host of the Association so many times.

Further details of the meeting, with the complete program will be sent out by mail from the secretary's office, as this journal will not issue again before the meeting.

### ARIZONA PUBLIC HEALTH ASSOCIATION

The fifth annual meeting of the Arizona Public Health Association will be held at Globe, on April 19th and 20th, the two days immediately preceding the meeting of the Arizona State Medical Association. This year various authorities prominent in the different departments of public health work have been invited to take part in the program, and a three-day short school of instruction for sanitary inspectors will be held. Everyone actively interested in public health is invited to attend the meeting.

#### AN ATTACK OF ETHICAL HEEBY-JEBBIES

"Resolutions passed at the Maricopa County

Medical Society meeting, Sept. 14, 1908.

I. RESOLVED: That, in accordance with generally accepted medical ethics, it is the sense of this Society that we discontinue the practice of newspaper and other unprofessional advertising, such as newspaper reports of cases, and that our Secretary be requested to instruct the newspapers of this city to omit the names of our members from all reports of cases, and that we furnish said newspapers with a list of our members.

II. WHEREAS. every medical practitioner is very liable to be unjustly blamed for producing abortion

and miscarriage, and

WHEREAS, it is the sense of this society that no effort should be spared to keep the name of

every physician clean, therefore be it

RESOLVED: That the members of this society agree to refuse to attend a case of abortion or miscarriage without a consultant; it being understood that in case of extreme hemorrhage or other condition dangerous to life, such temporary measures shall be adopted as are necessary to maintain life until a consultant be secured.

III. WHEREAS, it is apparent that quite a number of criminal abortions have been performed

in Phoenix during the past year, and

WHEREAS, such practice is contrary to the spirit of our profession and the constitution of our society; therefore, be it

RESOLVED: (1) That any member of this society who shall persist in this criminal work shall be promptly expelled from membership, and (2) that this society shall in the future do all in its power to have criminal abortionists punished by law, and (3) that the secretary be instructed to mail a copy of the resolutions to each member of the society."

The above record was found in the desk of an eminent practitioner of Phoenix, when he emptied it recently preparatory to moving into a new building. It was barely legible, written with a pen on a time-yellowed sheet which was so fragile with age that it fell to pieces in the hand. The doctor attached a brief note which said: "This gave me a good laugh and I thought it might get one from you; when you have read it, drop it in the waste basket, where these resolutions have long since gone."

This doctor and the editor came to Phoenix the same year, which was the year preceding the adoption of these resolutions. We have both been faithful members of the county society for nearly a quarter century, and are entitled to get a laugh out of the antics of the organization—if we feel so inclined. What is the answer when we look into the past and then into the present and realize that we have today just as good reason for such resolutions as we had in 1908? When we realize that we have not improved one iota in our ethical conduct in a quarter of a century? Is the answer always to remain "it is to laugh?"

We believe that a majority of the members of the Maricopa County Society, and of any other medical society WANT to practice medicine ethically, and DO practice medicine ethically. Why then do we constantly permit unethical things to be done by our members? The reason for the persistence of the practice to this day is because we placed those resolutions "on file" in 1908 and each went our individual ways, the guilty in the smug confidence that resolutions would do them no harm, and the innocent content to pass the resolutions and leave the enforcement of them to someone else.

This rotting piece of paper with its brave words is typical of the impotence of a right-thinking majority when a lawless minority chooses to defy a law. We write our words on paper; the letters fade, the paper rots, the misdeeds continue. If we wrote with one hand and seized the big stick with the other, the guilty would take cover—or reform. A dozen expulsions from many of our county medical societies, published in the newspapers, would elevate the medical profession in the eyes of the public more quickly than a year's educational talk.

#### "IT COSTS TOO MUCH"

This is the season when dues in medical societies must be paid. Many a check will doubtless be written with mental reservation to the effect that "there is another five dollars thrown away," or ten dollars or twenty dollars, as the case may be. We have in mind just now, as the text for this homily, the dues in the Medical and Surgical Association of the Southwest, increased two years ago from \$3.00 to \$5.00, and regarding which several of our members have written, "it is too much; count me out." What we

have to say, however, applies with equal force to the county and state dues and even more forcibly to the Fellowship dues in the American Medical Association.

We will frankly say, in the outset, that when we receive from any practicing physician in the southwest the avowal, "I cannot afford that" we do so with tongue in cheek. This skeptical attitude is excusable when we think of so many of the men who DO pay their dues regularly and cheerfully. In one of the four large cities of the southwest there is a general practitioner, in poor health but still trying to keep in the harness. he puts on his books as much as \$300.00 a month in charges and collects half of it he is happy. He has a family to support, but his check is invariably one of the first received when statements for medical society dues are sent out. Some months ago we asked where he went last summer for his summer vacation, and he replied: "Nowhere, I could not afford it." But his medical society dues were promptly paid for 1932 several weeks ago. We notice that his clothes are a little shabby, that his automobile is worn out, his son has left college and gone to work and his daughter in her teens is seeking work as a clerk. But his dues are paid, his head is up, he still BELONGS.

We have often heard the question, "Just what do I get for that" when dues are paid. There are return values, but they are difficult of appreciation by anyone who would seriously ask that question. We cannot say to any member, "Pay this five dollars and you will get back six dollars before the year is over." There is no such direct, immediate and tangible return for this investment, though there frequently is an indirect return. Patients are often referred from one city to another and frequently to certain physicians or surgeons known to be members of a medical society. This is not because the two doctors are fellow members of the same society, but because the fact of such membership stamps a doctor as a progressive and reliable practitioner. The treasurer's record of any medical organization is not just an account book; it is, to a certain extent, an index of character and trustworthi-

There is a "doctor in our town" who belongs to no medical society. Recently, he sat as a visitor in a group of serious minded men and women who began to discuss the accomplishments of the medical profession, in the conquering of infectious diseases, the control of cancer, the diminishing death rate from tuberculosis, the lowering of infant mortality, the prolongation of life, and so forth. He listened for he could not con-

scientiously take part. He could not say, "WE have done all that", because those are the accomplishments of the organized medical profession, and he does not belong. The benefits coming to him through laws regulating medical practice, through court decisions safeguarding the practice of medithrough enlightened public ion regarding all doctors and their achievements, the things which permit him to walk the streets with head up and with the respect of his fellow citizens because he is a "Doctor," have come to him not through his own efforts, but because the organized profession have brought about those conditions. Every medical society has its sphere of influence, its particular objectives, its range of activities; these may be restricted or may be extensive, but every doctor within the boundary of the organization is either in it and for it, or he is out of it and against it. "Who is not for me is against me" was said by a very wise man a long time ago; he was probably not thinking of medical societies, but the saying is applicable nevertheless.

The objectives of the Medical and Surgical Association of the Southwest include the development and making available the medical and surgical facilities of the southwest as a district. Is it worth five dollars to any doctor in the southwest to BELONG to that project? All of us spend larger sums than this for things of lesser value.

The majority of doctors do not drink, but we hesitate to estimate what some of us waste on bootleg liquor; one-half the allowance in many a doctor's budget for illicit drinking would buy him a life membership in a half dozen medical societies, and if so used would be a better insurance that he would live long enough to enjoy their benefits. We know of doctors who quit drinking because of fear of cirrhosis of the liver, others who were afraid of wood alcohol poisoning, and in exceedingly rare instances one has quit because he respects the Constitution of the United States, but never have we heard of one who shuns the boot-legger because "it costs too much," in money.

A golfing doctor might carry his own clubs two afternoons and the caddie fees would be the difference between the old dues and the new dues in the Southwest organization. We know of doctors who grew tired of the doldrums between 100 and 120 strokes and quit because they could not "break a hundred." We know a few who got too busy with other affairs and gave up golf, but we have yet to see the medico who dropped the game because "it costs too much."

A doctor who takes his enjoyment auto

driving about the countryside on Sunday afternoons, could stay at home just one time and save enough on that one hundred mile jaunt to pay this difference in dues. We know of some doctors who are too lazy to drive out with their families, others who let the wife have the car while they hie away to the golf course, and a few who just do not like to drive, but the fellow who just stays at home on a bright sunshiny afternoon, because "it costs too much" for gasoline and tires is a rara avis indeed.

Lastly, while we do not smoke, we understand that some of the popular brands of cigarettes cost as much as ten cents a package. ONE package a day, a very small sacrifice for any smoker, would pay his dues in the Maricopa County Medical Society, the Arizona State Medical Association, the Medical & Surgical Association of the Southwest, his Fellowship dues in the American Medical Association, and leave \$6.59 over for a subscription to some other first class medical journal. We would like to have the name of the doctor who stopped smoking, or even cut down on his expenditures for this pleasure, because "it costs too much."

What is the worth of the medical society? The consciousness of a fraternity of interests,, the immeasurable influence of united thought, the intangible worth which comes from a community of effort along certain lines, values which cannot be analyzed in words but are none the less real, these are the quid pro quo of medical society membership. To any member who cannot sense the value to him of society membership and who considers dropping that membership, we wish to say that whatever it may cost you to stay in, "it costs too much" to drop out.

#### AMERICAN COLLEGE OF PHYSICIANS TO AWARD PRIZE TO DR. O. T. AVERY

The American College of Physicians recently selected Dr. O. T. Avery of the Hospital of the Rockefeller Institute of New York City as the recipient of the John Phillips Memorial Prize for 1932.

This prize, an annual award by the College in the sum of \$1500.00, is given to perpetuate in the College the memory of Dr. John Phillips of Cleveland, a man of outstanding accomplishments as investigator, teacher and physician, for many years a member of the Board of Regents of the American College of Physicians, who gave his life in saving others on the occasion of the Cleveland Clinic disaster on May 15, 1929.

The Committee on the John Phillips Memorial Prize, through its chairman, Dr. James H. Means of Boston, recommends the award, "To Dr. O. T. Avery for the series of studies upon the Pneumococcus in which he has played a leading role, beginning with the discovery of the type-specific soluble capsular polysaccharides and culminating in the discovery of o bacterium producing an enzyme which splits the polysaccharides of Type 3 Pneumococcus in vitro,

thus rendering it susceptible to phagocytosis and thereby protecting the animals infected with it."

The Sixteenth Annual Clinical Session of the College will be held in San Francisco during the week of April 4, 1932. Dr. Avery will deliver an address, "The Role of Specific Carbohydrates in Pneumococcus Infection and Immunity", at the Convocation on Wednesday evening, April 6. At the conclusion of Dr. Avery's address, the prize will be presented to him by Dr. S. Marx White of Minneapolis, President of the College.

The distinction of this award is enhanced by the fact that although it was available the previous year, it was not possible to decide on a suitable recipient. This is, therefore, the first award made. It is the hope of the officers and members of the College that this annual prize in memory of a distinguished colleague may, by recognizing merit, be a continuing stimulus to investigators in those subjects having a direct bearing on the advancement of Clinical Science.



#### DR. HENRY S. WELLCOME

Many friends and associates of Dr. Henry S. Wellcome in the United States will be gratified to learn that knighthood was conferred on him in King George's New Year honor list in recognition of his generous support of medical research.

Dr. Wellcome is the head of Burroughs Wellcome & Co., London, manufacturers of fine chemicals and galenicals, with establishments in the United States, Italy, Canada, Australia, India, China, and other countries.

It is interesting to note that Dr. Wellcome is a native of Wisconsin and became a British subject by naturalization.

He was graduated at the Philadelphia College of Pharmacy and Science, and from the beginning of his career Dr. Wellcome made original scientific research and strictly ethical methods the foundation of his life's work.

Dr. Wellcome's American interests are wide and varied. He is a Director of the Gorgas Memorial Institute of Tropical and Preventive Medicine, Washington. which operates scientific laboratories at Panama for research work touching causes and

prevention of tropical diseases.

Dr. Wellcome is a life member of the American Pharmaceutical Association and has taken an active interest in its scientific work since the beginning of his membership in 1875. During the past several years Dr. Wellcome has taken an active interest in the campaign for the establishment of a national headquarters building for the Association in Washington to be known as the "American Institute of Pharmacy". Dr. Wellcome's interest in this project has been evidenced by words and deeds. At the last annual meeting of the Association held in Miami, Florida, during July 1931, Dr. Wellcome was elected Honorary President of the American Pharmaceutical Association.

The childhood of Dr. Wellcome was spent in a frontier settlement of Minnesota, and here his interest had its inception in archaeological subjects and this has continued to develop and find expression in some of Dr. Wellcome's larger undertakings,

which are well known to Archaeologists.

As a result of his early contacts on the frontiers of civilization Dr. Wellcome came to know the American Indian. For a great many years Dr. Wellcome has taken a personal interest in the welfare of a tribe of Indians in Alaska. In 1887 he published a work of some 500 pages on these Indians under the title of "The Story of Matlakahtla" which relates how this tribe of savages was transformed into peaceful, industrious dwellers and tillers of the soil through education and the adoption of Christianity.

Dr. Wellcome has received world-wide recognition for his great service to science and medicine, for his interest in missionary enterprises, and for his personal work in medical research, the history of medicine, and for his archaeological and ethnological ex-

plorations and studies.

#### HEART SYMPTOMS IN A SYPHILITIC

(Continued from page 131)

and also heard down the left border of the sternum to the third left interspace. There was definite pulsation and thrill in the second right interspace and a thrill in the suprasternal notch. Rate 85. Action regular. Pulses synchronous, not paradoxical. walls too thickened to make out gan quality. Blood pressure 180/80 to 140/70. An electrocardiogram January 28 showed normal rhythm, rate 80, P-R interval .22 seconds, marked left axis deviation, probable intraventricular block. Another March 5 showed auricular fibrillation, rate 100, ectopic ventricular contraction (lead I), intraventricular block as before. Coarse moist rales at the bases of both lungs. At the left base posteriorly dullness, diminished tactile fremitus, normal voice and breath sounds. In the abdomen a small amount of free fluid. In the left inguinal region a remarkable mass of greatly dilated veins, the result of trauma. Pitting edema of the legs and sacrum. Pupils equal regular, reacted promptly to light and accommodation. Bilateral cataracts. Kneejerks and ankle-jerks not obtained.

Urine normal in amount, specific gravity 1.017 to 1.031, the slightest possible trace to a trace of albumin at 22 of 31 examinations, sediment negative until March 18, then 1 to 30 leucocytes at 5 of 6 examinations, 1 or 2 red cells twice. Culture from a catheter specimen March 22 showed no growth. Renal function February 4, 10 per cent., February 12, 40 per cent. Blood: 8,650 to 15,700 leucocytes, hemoglobin 70 to 90 per cent., polynuclears 87 per cent., reds normal. Three Wassermanns negative, one strongly positive. Non-protein nitrogen 43 to 56 milligrams. Stools, guaiac negative three times,

strongly positive once after epistaxis.

A portable x-ray showed the mediastinal shadow increased in width, chiefly to the right. The increase was somewhat exaggerated by rotation of the patient. There was also some evidence of tortuosity of the aorta. It was thought the appearance should be checked by fluoroscopic observation.

Temperature 98° to 100.05° with two periods of greater elevation, as high as 101.5° February 3 to 7 and March 16 to 19. Radial pulse 55 to 125. Pulse deficit 4 to 90 beats. Respirations 16 to 47.

The patient was psychotic at night and silent by day, went downhill steadily, and by the end of the first week was psychotic day and night. During the week ending February 17 he made some improvement, had much less dyspnea, and lost the signs of congestive failure. He continued to gain, and by March 2 was considered ready to go out as soon as arrangements could be made for a place for him.

March 4 he developed Cheyne-Stokes' respiration and fibrillation with an apex rate of 120 and radial of 116. There was a pericardial friction rub. The next day he was in much the same condition he was in a month earlier, querulous, psychotic and extremely short of breath. The heart was fibrillating, rate 110. No rub was heard. The bases of the lungs were very edematous. The Cheyne-Stokes' respiration continued until March 6. By the 11th the heart condition had quieted down but the patient was extremely dyspneic and constantly psychotic. March 17 his legs and genitals were enormously swollen and he looked moribund. He made a little improvement for a day or two, but soon was worse than ever. For the next month he seemed about to die at anytime. Massive edema extended to the upper extremities. April  $17\,$  he died.

#### Discussion by Dr. Hamer

In this case, there should be no difficulty in making a diagnosis of syphilitic disease of the aortic valves and aorta. It would seem that our problem is one of ascertaining if any other disease process is present in the heart of this patient, besides syphi-

The past history on this case indicates to us the two outstanding symptoms for which relief is sought in syphilitic heart and aortic disease; namely, paroxysmal dyspnea, and substernal oppression, one or both of which are highly suggestive, especially of syphilitic aortitis, and especially if these occur without other evidence of cardiac insufficiency. That history dated back some years ago, but, at the present time, we have a patient with a definite cardiac breakdown, and with definite evidence of failing circulation. The question, as stated before, is whether this patient has only syphilis or some other pro-

A diagnosis of syphilitic aortitis with aneurysm formation, and aortic regurgitation can be made in this case. The history alone would warrant a diagnosis. Simple or uncomplicated aortitis sometimes is not sufficiently well defined to make a diagnosis, but when we have the presence of syphilitic aortitis, the diagnosis is usually easy. Aortic insufficiency is always highly suggestive of syphilis until

proved otherwise.

Rheumatic fever is the most important etiological factor to consider in differentiating from syphilitic lesions. Usually syphilis and rheumatic fever are clear-cut entities. A case of aortic insufficiency, if combined with a mitral lesion, giving a definite rheumatic history, and no evidence of syphilis, should be and is rheumatic infection; while a case of aortitis, with an associated aortic insufficiency, MARCH, 1932

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having positive historical, physical, and serological evidence of syphilis, and no rheumatic history, should be syphilitic aortitis and valvulitis. Such it is with this case, and other well-known facts help us to make the diagnosis, such as that aortic insufficiency due to lues exceeds all other causes combined, a prolonged latent period before a serious onst in contrast to early appearance of cardiac signs of rheumatism, the age of the patient is more in line with a case of syphilis; in rheumatism, the signs of trouble are usually those of simple cardiac insufficiency, while in lues the symptoms of substernal oppression and intermittent dyspnea are more common. Also, aortic dilatation is practically a regular accompaniment of lues, and not of rheumatic fever.

There are also other physical findings of lues here, such as a perforated nasal septum, a high pulse pr.ssure, widening of the aortic region, a thrill, diastolic shock over the aortic region, hypertrophy of the heart, and also an edema, moisture in the lungs, and cyanosis, which, however, would indicate cardiac and circulatory failure from any cause.

It would seem that the signs over the mitral area are interesting for speculation. Have we a definite mitral lesion here too, or are the findings simply an expression of the expansion of the aortic murmurs? It would be very difficult to say, but my guess would be that what is heard over the apex is an Austin Flint murmur—a phenomenon very difficult to diagnose. Lues itself rarely attacks the mitral valve, but in luetic aortic insufficiency one hears at times a presystolic murmur which at autopsy shows itself to be a true Flint murmur. Again, with hypertrophy and dilatation of the heart, incident to an aortic insufficiency, there can occur a relative mitral leak due to the stretching process.

Another problem in diagnosis would be an atheroma of the aorta, atheromatous valve changes and hypertinsion. It is possible that this might be combined with lues, and at the age of this patient could be possible. But here our blood pressure is not one of hypertension, the diastolic is too low, although we must remember that this patient's heart is not functioning very well. The blood pressure here is more consistent with a Corrigan-like pulse, with a large pulse pressure. We have not sufficient evidence here to make a diagnosis of arteriosclerosis. Hypertension and atheroma, while not a part of the usual picture of luetic aortitis, occur, as a rule, later in life to this extent, and when present do not usually give us the picture of paroxysmal dyspnea, substernal oppression of the nature indicated, or the characteristic type of valve sounds heard here.

The question of an intrathoracic tumor might be raised, but it is unnecessary to mention in detail

all of these. Tumor symptoms are largely those of pressure, and these pressure symptoms may be the same as those of aneurysm, but in these cases the other symptoms of acrtitis and valvulitis are usually absent.

My diagnosis on this case would be hypertrophy and dilatation of the heart, syphilitic aortitis with aneurysm of the asc nding aorta, and aortic insufficiency, syphilitic stenosis of coronary arteries, chronic passive congestion of the organs, anasarca, and probably arteriosclerosis.

#### Discussion by Dr. Ketcherside

This patient, when first seen, seven years before admission, at the age of 50, already had a well-developed aortic lesion with enlargement of heart and great vessels. Most aortic insufficiencies, particularly before the age of 50, are caused by syphilis and, since this man gave a history of syphilis 20 y ars ago, we are safe in assuming that he had a syphilitis aortitis, with aortic insufficiency and aortic stenosis.

On admission he stated that nine months previously his dyspnea became worse, with a sense of severe pressure over the heart and lower chest on excertion. After three weeks rest he was able to resume work with little trouble except for dyspnea and pain, until two weeks before admission, when he became too weak and dyspneic to work.

Examination on admission showed among other things, pulsation on both sides of ncck. The whole precordium h aved, supracardiac dullness in the second space 6 cm. to the left and 3 to the right. There was a definite pulsation and thrill in the second right interspace and a thrill at the suprasternal notch. From all these evidences I should say that he had developed an aneurysm of the ascending aorta. He showed many evidences of failing heart muscle and later developed a precordial friction rub which was probably from pericarditis.

Diagnosis: syphilitic aortitis with aortic insufficiency and stenosis; aneurysm of ascending aorta, myocarditis, pericarditis, arteriosclerosis, nephritis.

Syphilis is primarily a disease of the blood vessels so we should expect to find a high incidence of heart disease in syphilitics. Over 75 per cent of all aortic insufficiencies occur in syphilitics. Aortitis occurs in at least half of the cases of late-acquired syphilis. The lesion usually develops between the ages of 40 and 50. Myocardial and pericardial changes are very common. Heart block is also very common from syphilitic changes in the bundle of His. In patients who must continue work for a living, the prognosis is bad, even if proper antisyphilitic treatment is given.

addicts.

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#### Differential Diagnosis by Dr. Cabot

He certainly died of congestive failure in heart disease. If one were making out the death certificate one certainly could say as much as that. But I want to discuss the question, did he die of syphilitic or of rheumatic heart disease? I think it makes

some difference, especially to those coming after. Let us take the question of aneurysm first. If he had syphilis he had aneurysm in all probability, although it is possible to have syphilis without aneurysm. Has he had pain characteristic of aneurysm? I should not say so. He has had pain, but that pain could be explained either by aneurysm or otherwise. He did not seem to have it in the hospital. There was definite pulsation and thrill in the second right interspace. I do not see how we can hilp saying that is aneurysm. I do not see what else would give defi-nite pulsation and thrill at that point. He could have thrill but not pulsation in the second right in-terspace from anything clse that I can think of. It is too high for the auricles, too low for the great vessels. Everything else goes with a syphilitic heart and aortic regurgitation, except that I should expect an even greater pulse pressure. The pulse pressure is not so great as I should expect with a syphilitic heart. The dyspnea dates back seven years. That is a good point. If he had heart trouble for seven years it probably was not syphilitic.

Those murmurs in the early part of the history could be accounted for by a rheumatic lesion with stenesis and regurgitation, or by a syphilitic lesion with regurgitation only and an aneurysm to cause the pulsation. So far as the murmurs are concerned either will do, rheumatism or syphilis. I am really equally balanced myself. The pulsation however looks like aneurysm, and if aneurysm synhilis. I think there is a little to favor that, and so I am going to say syphilitic aortitis with aortic regurgitation and aneurysm, hypertrophy and dilatation of the heart, chronic passive congestion, and that is all.

#### DR. CABOT'S DIAGNOSIS

Syphilitic aortitis with aortic regurgitation.

Hypertrophy and dilatation of the heart. Arteriosclerosis.

Chronic passive congestion.
Pathelogical Discussion by Dr. Mallory

Primary fatal lesion

Arteriosclerotic heart disease-aortic stenosis and insufficiency.

Secondary or terminal lesions

Hypertrophy and dilatation of the heart. Chronic passive congestion.

Arteriosclerosis of the aorta.

3. Historical landmarks Apeurysm of left iliac artery.

Laft inguinal varices.

The man did have an aneurvsm, but it was not in the place where it was suspected. It was in the left iliac artery. The aorta was rather di'ated, but not beyond the extent to which we very commonly see it dilated in elderly persons with arteriosclerosis. The heart was perfectly enormous, weighing 925 grams, almost a kilogram. The left ventricle wall was thirty millimeters thick. The valves were negative except for the aortic. which was tremon-dously thickened, with irregular, rough, calcified masses; so that there was no elasticity of the ring at all. and there must have been a considerable degree of stenosis and regurgitation. There was nothing in the acrta itself that we could definitely say was syphilis.

This aneurysm in the left iliac artery may possibly have heen syphilitic in origin, may also possibly have been traumatic, connected with the injury which is said to have caused his varicocele ther. Sections showed no positive evidence of

syphilis.

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There was no tuberculosis of the lungs. The other organs showed only chronic passive congestion and a very slight degree of arteriosclerotic nephritis, not enough to cause any symptoms.

PROPAGANDA FOR REFORM

Administration of Suprarenal Cortical Extracts. The efficacy of replacement therapy in cases of Addison's disease by the injection of suitably prepared extracts of the suprarenal cortex, freed as far as possible from the epinephrine liberated by the medulla of the gland, has apparently been established. For patients that tolerate intramuscular injection well, this is perhaps the preferable method of administration. The intravenous method is indi-cated when the patient is in crisis and an immediate response is necessary. The possibility of effective oral administration has recently been reported on. In cases in which prolonged treatment is demanded, the oral route may be of preferential utility. (Jour. A. M. A., January 2, 1932, p. 52.) "Infra-Red".—Under the incorrect and confusing

name "Infra-Red" the Iodine Products Co. of Caney, Kansas, describes an office test to determine the degree of acidosis. The designation "Infra-Red" is applied to a "super-alkalized iodide." This test can do no more than determine the titratable acidity of the urine. However, this is not the method of choice in measuring the development of an acidosis. (Jour.

A. M. A., January 2, 1932,p. 71).

Nucleotide K 96.—The Council on Pharmacy and Chemistry in preliminary report on Nucleotide K 96 reports that Jackson and his collaborators reported their clinical results in the treatment of twenty cases of profound leukopenia by intravenous injection of unbroken pentose nucleotides, stating that fourteen patients recovered but that no conclusions can be drawn as to the efficiency of the material

until a much larger series of cases has been adecuately treated. The product used was prepared by the Smith, Kline & French Laboratories. The firm requested consideration of the product by the Council under the name Nucleotide K 96, stating it to be a mixture of the sodium salts of the pentose nucleotides derived from nucleic acid. The designation "K 96" was used because this was the number of the preparation decided to be the most effective or most appropriate for intramuscular use, and the present product may be replaced by a more acceptable one. The Council deprecates the use of numbers in connection with names and believes that unless a series of similar preparations are to be released by Dr. Jackson that it will be better to use some such acceptable name as "pentnucleotide". The Council believes that pentose nucleotides or some similar preparation holds promise of instituting a new era in the treatment of a rare and usually fatal syndrome, but that the preparation now under consideration is not ready for general use by the medical profession. The Council held the pro-duct not to be eligible for New and Nonofficial Remedies at this time but, since the experimental evidence is adequate and the composition of the product sufficiently controlled, the Council issued this preliminary report on the product. (Jour. A. M. A., January 9, 1932, p. 142).

Carbarsone.—The Council on Pharmacy Chemistry reports that Carbarsone, according to the reports of Dr. C. D. Leake and his collaborators, who have been conducting preliminary trials of the amebacidal value of the product, is p-carbamino-phenyl arsonic acid, and that the firm of Eli Lilly & Co. has collaborated with Leake in the production of the product and has agreed to undertake its manufacture. The Council reports that the evidence

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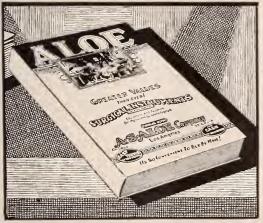
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### A. S. ALOE COMPANY

932 South Hill Street, LOS ANGELES, CALIFORNIA appears adequate to show the chemical composition of the product used and gives assurance that its purity and uniformity will be adequately safeguarded. The papers of Dr. Leake and of Leake and his collaborators present evidence to show that compared with other amebacides, Carbarsone seems to be effective; but the recurrences noted in monkeys after treatment, suggest that a similar experience may be had in man, and that the clinical evidence as a whole is promising. The Council agrees with Leake and his collaborators that more clinical evidence of a confirmatory nature is desirable and has postponed consideration of Carbarsone for inclusion n New and Nonofficial Remedies to await the development of further clinical evidence of its value. (Jour. A. M. A., January 16, 1932, p. 230).

Average Optimum Posage of Cod Liver Oil.—The Coun il or Pharmacy and Chemistry reports that at present the recommended desages of colliver oil differ widely. In part, the varying effects that have been reported may no doubt be explained by the unlike activity of different brands of cod liver cil. Thus, while the U.S. Pharmacopeia permits the claim that the product is biologically standardized if it contains 50 vitamin A units per gram as determined by the method given, certain brands now in New and Nonofficial Remedies guarantee a potency of 1,000 U.S. P. vitamin A units per gram, and none contains less than 500 units. The vitamin D potency of cod liver oil is probably still more uncertain, since no official method of assay has been adopted; hence it is most difficult to compare different brands of cod liver oil even if the vitamin D potency and method of assay are declared. In view of the foregoing situation, the Council referee in charge of cod liver oil and cod liver oil preparations believed that some effort should be made to ascertain the amount of cod liver

oil that must be administered under ordinary conditions to obtain the effects attributable to cod liver oil. With a view to obtaining an expression in regard to the dosage of cod liver oil, an inquiry was formulated and sent to nineteen pediatricians. From the replies received it was noted that little reference is made to the possible physiologic value of the vitamin A of cod liver oil, and that the consideration of dosage is expressed wholly in relation to the vitamin D content, or in terms of its effects in overcoming the relatively obvious physical manifesta-tions of rickets. In all the opinions cited, the authors apparently recognize the added value of vitamin A and prescribe cod liver oil in preference to plain viosterol. Viosterol is favored, however, but only as a supplement, such as cod liver oil with viosterol 10 D. Most of the pediatricians quoted seem to agree on a dosage of 3 teaspoonfuls daily as amply sufficient to prevent and cure clinically evident rickets. In contrast to the practice of physicians in former years, most of the pediatricians begin the administration of cod liver oil at a time when the growth begins to accelerate—if not within two weeks, then at least before the end of the first month—reaching the maximum dosage usually during the third and rarely later than the fourth month, thus usually aborting the rickets in its earliest incipience and hence obviating the use of large doses later. There appears to be general agreement that it is only during these first two or three months of most rapid growth that the child requires its maximum dosage of cod liver oil, which may be continued as an ample dosage on up to 2 years of age. The Council has decided that a dosage of 3 teaspoonfuls (12 cc.; 3 fluidrachms) daily, may tentatively be set as the standard optimum dosage of cod liver oil for the average infant at 3 months of age. (Jour. A. M. A., January 23, 1932, p. 316).



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WRITE FOR LITERATURE

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RAHWAY, N. J.

Electrovita.—"Electrovita" is said to be manufactured by the Electrovita Company, Inc., of Norwalk, Ohio, which has for its general distributors the Electrovita Sales Company of the same city. According to the label, Electrovita is an "artificial mineral water." The claims on the trade package are mild and conservative as becomes statements that come under the National Food and Drugs Act which prohibits fraudulent claims on trade packages. But the trend of such advertising as is NOT on the trade package and therefore not subject to the Federal law, is to make the public believe that this city tap water, that has been subjected to electrolysis, has taken on some esoteric qualities that changes it from ordinary hydrant water into a veritable catholicon—a panacea for whatever may ail you. Both the printed leaflets and the Sales Manual declare that the exploiters of Electrovita do not recognize specific disease or promise a specific cure but the Sales Manual contains references to specific conditions, such as, cancer, arthritis, syphilis, female trouble, venereal disease, etc. From an examination of Electrovita in the A. M. A. Chemical Laboratory it may be calculated that the product consists essentially of 0.068 Gm. of calcium hydroxide in 100 cc., with a very small amount of calcium sulphate. This is equivalent to approximately 49 per cent of the strength of lime water U. S. P. It would be difficult for the Electrovita people to persuade the public that they have the marvelous panacea that they claim, if they admitted that their preparation was merely ordinary, official lime water, half-strength. (Jour. A. M. A., January 23, 1932, p. 337).

Thallium Poisoning.—The dangers of poisoning by thallium has been reported on. Its use as a rodent poison originated in Germany about 1920. Later the remedy was introduced as a depilatory to be applied either locally as a cream or to be taken internally. During the past year or so medical literature has contained reports of severe poisoning following the use of a proprietary depilatory cream called Koremlu, which had for its active ingredient thallium acetate. In its action, thallium seems definitely to select nervous tissue. There is apparently no known certain antidote to the action of thallium. It is a cumulative poison of high toxicity, without taste, smell or other warning properties. (Jour. A. M. A., January 30, 1932, p. 406).

Institute of Western Research.—The Institute of Western Research, claiming to have offices in Los Angeles and San Francisco, is issuing, or has issued, pieces of publicity for products and persons of a medicinal and medical character. Among the booklets issued by the Institute of Western Research have been one dealing with the activities of the University of Southern California, one on Dr. W. E. Balsinger, "plastic surgeon", another on the College of Osteopathic Physicians and Surgeons, one on "Terpezone" and one on "Tarzana Mineral Water". Terpezone was the subject of an unfavorable report by the Council on Pharmacy and Chemistry. (Jour. A. M. A.: January 30, 1932 p. 418)

A. M. A., January 30, 1932, p. 418).

Pantopon-Roche Omitted from N. N. R.—Pantopon-Roche (Pantopium Hydrochloricum), marketed by Hoffmann-La Roche, Inc., is a mixture of the hydrochlorides of the alkaloids of opium containing 50 per cent of anhydrous morphine hydrochloride. The Council on Pharmacy and Chemistry reports that it was accepted for New and Nonofficial Remedies in 1915 and that, in accepting the product and repeatedly thereafter, the Council has insisted that the firm avoid in its advertising any claim that Pantopon-Roche is possessed of essential properties lacking in morphine. The Council was obligated, however, to remind the firm that its advertising should not contain this claim either directly or by

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inference; and the firm repeatedly signified willingness to abide by this condition. Recently a circular letter of Hoffmann-La Roche, Ind., was forwarded to the Council by a physician. The intent of this letter to indicate that the action of Pantopon-Roche is essentially different from that of morphine was plain. Furthermore, the letter failed to appraise the physician of the identity of the product, namely, that it is a mixture of the hydrochlorides of opium alkaloids. The Council concluded that Hoffmann-La Roche, Inc. could not be depended on to market Pantopon-Roche with claims which make it acceptable for New and Nonofficial Remedies and therefore rescinded the acceptance of the product. (Jour. A. M. A., October 3, 1931, p. 1001). Pernocton Not Acceptable for N. N. R.—Pernoc-

ton, stated to be a 10 per cent solution of the sodium salt of the secondary butyl-beta-bromallyl barbituric acid, was submitted to the Council on Pharmacy and Chemistry by Riedel-de Haen, Inc. The product is proposed for intravenous injection for production of "Pernocton sleep". Since the name is therapeutically suggestive, the firm proposed to replace it with "Pernoston" and requested consideration under the latter name; however advertising as late as May, 1931, still bears the name Pernocton. The Council on Pharmacy and Chemistry declared the name Pernocton therapeutically suggestive and held the product, whether marketed as Pernocton or Pernoston, unacceptable for New and Nonofficial Remedies for lack of critical evidence that routine intravenous injection of potent narcotics is desirable or safe. (Jour. A. M. A., October 3, 1931, p. 1001).

The A. M. A. Chemical Laboratory.—The A. M. A. Chemical Laboratory cannot analyze specimens for individuals. 1. The chemical work undertaken by the Laboratory must be of general interest to physicians, 2. The Laboratory is busily engaged in the work for which it was founded, namely, investigations of the newer remedies for the Council on Pharmacy and Chemistry. 3. The Laboratory undertakes examination only of products in original containers, bearing original labels and the source of which can be vouched for in case of possible court action. 4. The present Laboratory would need much enlargement and a far larger staff to examine specimens for all of the one hundred thousand physicians it is designed to serve. (Jour. A. M. A., October 3, 1931,p. 1001).

THE HISTORY OF HEMOSTASIS, by Samuel Clark Harvey, M. D.; Professor of Surgery, Yale University; Surgeon in Chief, New Haven Hospital. With 19 illustrations; Paul B. Hocber, Inc., New York, 1929.

This is a short essay on a most interesting his-

torical subject of surgery.

The Egyptians used astringents of heavy metals and often cold, compression, hot oil and elevation

of the part.

The Chinese made use of styptics and bandages. As would be expected, when it is not recognized that blood was carried within blood vessels, there was no accurate method for the control of hemorrhage. Now and again the ancient cautery was used.

Celsus, in the early Christian period, probably first applied a ligature, although it was never used except as a last resort—styptics and compression being used first.

Archigenes, about 100 A. D., suggested the sewing of blood vessels, although he probably never actually ligated a vessel as we know it today.

Rufus of Ephasus recommended digital pressure, pressure with bandages, cold, astringents, torsion and ligature.

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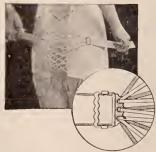
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Galen seemed to make use of all that had been recommended before him for the purpose of staying bleeding. He recmomended also that a finger be placed over the vessel until a clot formed; in the wounds he used roasted rosin, fine flour, gypsum, and so forth. He also recommended the use of ligature or Celtic linen, for arteries. After Galen, came the black night of the middle ages of ignorance and superstition, and all progress was stayed for many centuries. Surgery in the meantime was divorced from medicine and the men did little but quote the sayings of the ancients and use the cautery in place of the knife. This was "refined in its cruelty and explicit in its application." Authority for this was from Hippocrates and Galen. Hippocrates had said that. "what the medicament quelleth not, the iron doth; and that which the iron amendeth not, the fire extermineth." As any one could apply the cautery and no one the ligature, it resolved its: If into the treatment of wounds, and little else was done.

Hugh Lucca and Theodoric used both the suture and the ligature in hemorrhage.

Lanfranc, the father of French surgery, used styptics, compression, torsion and the ligature, although in the main he was a cauterist.

Henri de Mondeville felt that "God did not exhaust all the crative power in making Galen," and introduced again styptics, compression, ligation and acupressure.

Leonardo Bertopaglia drew the vessel forward with a steel hook, isolated it, and tied it with a flaxen thread. He often used softened catgut, which previously had been recommended by Rhazes.

Paré began his surgery by cauterization of the wounds, either by hot oil or by the use of the actual cautery. With a lack of hot oil on one occasion he

used other agencies and discovered that healing was better and less painful than with cauterization.

After some fifteen years the idea percolated to the surface that cauterization might not be necessary. Paré amputated a leg, using only the ligature; the man made recovery. Paré said: "I dressed him and God healed him. The man returned home gaily with a wooden leg saying that he had got off cheaply without being miserably burned to stop the bleeding." Sometime later Paré used a pinching instrument, one originally used for grasping bullets, for the purpose of grasping bleeding vessels. This became the artery forceps.

Fallopius thanked God for audacity sufficient to use the ligature for homorrhage but he still used the cauteary for amputation. There was a great deal of criticism of Paré and a great tendency to use the ligature without giving him credit.

In some unknown way and by some unknown person it was found that pressure to the main trunk of the blood vessel sometimes stopped hemorrhage in the main wound.

Morel applied a bandage and twisted it with a stick. This was in 1664. This became the tourniquet of all later times, and was so sensible and so efficacious that there has never been any serious opposition to its use.

Petit in 1731 came to the definite conclusion that coagulation within a blood vessel was the sensible thing to stop hemorrhage. He recognized that the rupture of the coats was necessary in producing the clot. A study as to what became of the ligature was also begun. S psis was the rule, and sloughing was almost invariably the cause of secondary hemorrhage.

Physick, the father of American surgery, in 1806 recommneded and used twisted buckskin in the form

of a thread, as a ligature.

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P. O. Box 1461 EL PASO, TEXAS It was at the suggestion of Von Graefe, the elder, that the first instrument which might be called an artery forceps was made. Physick also had a crude artery clamp. Crude clamps then came into more or less general use.

Halsted was impressed in 1881, at the time he visited Germany, that surgeons were badly in need of hand artery forceps. He set to work and developed what is almost the modern artery forceps.

Spencer Wells developed a smilar clamp about this time. One or two artery clamps was all that any surgeon possessed. Few hospitals in New York had as many as six in 1880, although Mikulicz, in Billrith's clinic in Vienna, in 1889, used as many as a dozen clamps or more.

Lister, in attempting to obtian early and complete healing of the wound, found that unabsorbable ligatures were definite impediments. He began experimenting with various agencies to use as ligatures. He made a study of arteries which had been ligated. After a time he came to the conclusion that silk must be discarded. He came to the use of animal ligatures and catgut. Ultimately, he decided upon what is commonly known as catgut as being the only absorbable material. Since that time there has been a great deal of work done toward perfecting and preparing it for use. Catgut has long been known. An instrument was found in Rameses' tomb strung with catgut, which, after 3000 years, gave forth a musical note—perhaps the same note that charmed the ear of the great Pharaoh. The Indians used gut for their bows and it has been used in many other instances.

This is a well-written, entertaining, historical review of hemostasis.

O. H. B.

THE TREATMENT OF DIABETES MELLITUS WITH HIGHER CARBOHYDRATE DIETS, by William David Sansum, M. D.; Harper and Brothers, Publishers.

This excellent treatise on diabetes gives the physician and his patient an easily understood outline of the normal diet requirements, the cause of the disease, its manifestations, the objectives and the routine procedure of treatment. The necessary laboratory procedures are explained, and the theory, use, and effect of insulin are clearly outlined. One chapter is devoted to complications of diabetes and their treatment.

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No. 4

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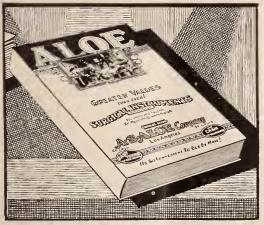
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### CHRONIC ARTHRITIS—A CLINICAL GROUPING

W. PAUL HOLBROOK, M. D.\* Tucson, Arizona

(Read Before the Medical and Surgical Association of the Southwest, at its Seventeenth Annual Session, held at Phoenix, Ariz., Dec. 3-5, 1931.)

Any discussion of chronic arthritis is at present most confusing because of numerous classifications and the many variations in terminology. Classifications now in use are, in general, based upon etiological or pathological suppositions. Etiological classifications can be of little help as no single factor has definitely been proved to be the specific etiological agent. One needs to recall but a few of the present affirmed etiological factors to realize that chronic arthritis is as yet a disease of unknown etiology. neurogenic theory, the theory of vascular deficiency, trauma, endocrine deficiency, presenile changes, the metabolic theory, the infectious theory, and many other hypotheses all have ardent supporters. Pathological groupings are but little better as material is very difficult to secure, and scattered observations during different stages of the same disease are apt to be misleading. The number of pathological examinations that have been correlated with clinical studies are far too few upon which to base an opinion. The writer has asked many pathologists in this country and abroad for such information —only to be told that his particular interest lay elsewhere, or that insufficient material could be secured to be of any value. Nichols and Richardson in 1909 arrived at their pathological classification, which has become almost classical, from a total study of only sixty-five cases, and of these a large number were on operative material and not postmortem specimens. Obviously, it is imperative to accumulate a great deal more information about the pathology of arthritis, and it should be accompanied by adequate

\*The Desert Sanatorium and Institute of Research.

clinical and laboratory data before accepting a pathological classification for clinical purposes.

It has been a hopeless task from our standpoint to fit our arthritis patients into existing ready-made groups. During several recent medical conferences in which arthritis was a special interest, leading authorities have proposed more than a dozen separate classifications, and were recommending equally diversified treatment. Because of this existing confusion and the absence of uniform clinical concepts, we decided to study a large group of arthritics completely and uniformly. These studies were made under the most complete control and supervision of the patient and in ideal climatic surroundings. During the past eighteen months three hundred patients with chronic arthritis have been selected from our hospital and outpatient department for this study. We have tried to consider these patients from two standpoints. Every effort, for instance, has been made in approaching them from a research standpoint, involving many exhaustive tests and examinations. We have also attempted the simplest clinical approach, and it is this practical, clinical study that is responsible for the present paper. The average length of time these patients were under observation was slightly over five months. Many of them were in the hospital the entire time, and nearly all of them were hospitalized at intervals. This group of patients has been carefully analyzed with regard to history, physical examination, laboratory, x-ray, and response to treatment. We have not assumed any specific etiology or pathology, but have grouped them solely upon a clinical basis.

The greater number of our patients come from widely separated points geographically, and so should represent an accurate cross-section of types. It is only fair to say that most of them are "last-resorters", and so should be thought of as representing the very chronic or advanced stage of the dis-

ease. Our grouping has been done in a very simple way. If two patients are alike in the critical points of history, physical findings, laboratory and x-ray, they are grouped together. The next patient who does not fit this group simply becomes the nucleus of a new group. Too much valuable time has been wasted in attempting to fit patients into pre-arranged classifications based on factors of which we know very little.

It seemed at the beginning an endless task, but there have emerged to date but six well defined groups. No argument is being made at this time for a separate etiology. Indeed, it is wholly possible that several groups may have one or many etiological factors in common. We have, however, found such a grouping practical and very helpful in selecting therapeutic measures.

#### GROUP I

Patients in this group have been classified by others in a great variety of ways. Rheumatoid, atrophic, arthritis deformans, proliferative, chronic infectious, metabolic, streptococcus hemolyticus, and primary arthritis are but a few of the terms used.

Type I Arthritis, as we use it, indicates a disease whose onset occurs usually after the third decade of life. In this group, in our series, the ratio has been five females to one male. There is very little in the past history that is helpful, except possibly severe psychic or emotional strain, and a story of constipation. The onset is insidious without febrile illness. The first joint involved is frequently the proximal interphalangeal or other small joints. The disease may progress slowly to involve all peripheral joints. The spine is spared. Pain and swelling are present in the joints, but never heat or redness. The deformity is characteristic and symmetrical. Trophic skin and muscle changes occur freely and are marked. Strangely enough the weight and general health are affected but little. A patient will frequently exclaim, "I should feel just fine if it were not for the arthritis". (In grading constitutional types from hyperathenic to asthenic we have classed the hypersthenic individual as 1 and the sthenic as 4). Patients with this disease are of type 3 or 4. The blood pressure is low early in the disease. No heart lesion is found. Foci of infection are often not found and, when they are, removal has little or no effect on the disease. To find other definite abnormalities is uncommon; indeed it is the rule for these patients to escape the other serious illnesses of life. Fever is absent, except late in the disease when trophic changes are marked, and then 99° F. plus is

The laboratory reveals a normal or slightly

urually the upper limit.

subnormal red count and hemoglobin estimation, a normal white count and differential, and a rapid sedimentation time of the red cells. Gastric hydrochloric acid is low or absent. The basal metabolism is not remarkable.

The x-ray shows periarticular swelling and early cartilage destruction. There is no bone production during the active stage of the disease. Demineralization of bones is extensive and early; gastro-intestinal x-rays show elongated and ptosed colon without

normal haustral markings.

This is also the patient whose emotional life is reflected so strongly in the symptomatology of her arthritis. This picture of an insidious, progressive, crippling, symmetrical, afebrile disease, is not difficult to recognize. It is most doubtful if anything definite has been proved with regard to etiology. One cannot help being impressed with the uselessness of attacking this problem from the standpoint of ordinary foci of infection. Our repeated findings of abnormalities in the gastro-intestinal tract have stimulated further investigation. Therapy should include a high vitamin, low concentrated-carbohydrate diet, and bowel regulation without cathartics. Activity should be forced, for in this disease it is truly a case of use or lose. General postural work to improve the habitus and especially to provide a full daily range of motion, together with corrective procedures to prevent deformity, are most essential. There is little excuse for deformity if these patients are seen early. Specific treatment of value is limited to the stimulation of cutaneous circulation, and under this group all forms of heliotherapy, massage, and heat may be grouped. Medication is of little help except symptomaticallv. Emotional readjustment is important. We have little or no success in this group of patients with vaccine, protein-shock therapy, or other so-called stimulating measures.

Case illustration of Type I is inserted to more clearly differentiate this type of patient from other groups.

Mrs. S., 54 years of age. Insidious onset of disease at 42 years of age with swelling and pain involving the proximal interphalangeal joints. Past history negative except for constipation and emotional strain. Four other members of the family had rheumatic joint disease. No foci of infection were ever found though several operations were done in a desperate search for the cause. Teeth, done in a desperate search for the cause. tonsils, and sinuses were operated upon with no effect. Vaccine was useless. Five years later, with attention to the intestinal tract and corrective exercises, the patient made a recovery. The following vear her husband died suddenly and she immediate-The following ly had a recurrence of the disease in all peripheral joints. She recovered again on management. Recurred very severely after recent financial losses. Patient is again responding to routine with greater difficulty than on preceding occasions.

APRIL, 1932

If infection plays a role in this interesting group of patients, few of its manifestations are evident and there are certainly other factors necessary.

#### GROUP II

This type of arthritis has also been classed, in general, rheumatoid, atrophic, chronic infectious, and usually no distinction has been made between these patients and those of the previous group.

The onset of this disease occurs at any age, usually at a younger age than type I. In our cases of this group the disease occurred twice as often in males as in females. There is often a history of head infections. The onset may be acute with a febrile illness, although the patient may not be aware of the fever. The first joint involved is apt to be a knee or wrist and not infrequently the neck becomes a source of discomfort. There is pain, heat, redness, and swelling in the joints at some stage of the disease and usuly at the onset. Deformity may occur late but it is not characteristic or symmetrical. Trophic skin and muscle changes occur with the disease, but the skin does not develop the shiny, thin and atrophied appearence of type I. Weight and general health are reduced. The patient does not feel well. This disease does not have the marked predilection for the asthenic individual. The blood pressure may be normal or low. There is not infrequently a suggestive heart lesion. Foci of infection are usually present, and removal early in the disease often produces a dramatic recovery. Fever is present at onset, con-. tinuously or at intervals.

There is a lowered red count and hemoglobin, and the white count and differential are somewhat elevated. The sedimentation rate of red cells is rapid. Gastric acidity is normal. Basal metabolism is not significant.

The x-ray shows periarticular swelling, no early cartilage destruction, and occasional bone proliferation later in the disease. mineralization is not marked, and gastrointestinal films are not remarkable. the disease with what appears to be definite infectious manifestations and often begins resembling a subacute rheumatic fever. Treatment should be conservative until a careful period of constitutional building has been completed, and then gradually radical removal of all foci may be instituted. The joints should be placed at rest in the early phase of the disease, utilizing every possible means to prevent deformity. High calory, high vitamin diets without much restriction should be used. Properly selected and prepared vaccine may be helpful with these patients. A course of several blood transfusions will often abruptly halt the disease.

#### GROUP III

This disease is often classified as osteoarthritis, hypertrophic, strepviridans, and senile arthritis.

The age of onset is late in life and without any suggestive past history. The sex ratio in this group was five males to one female. The onset is insidious, and stiffness of spine, or pain and swelling of the terminal interphalangeal joints is first noticed. There may be only pain and swelling of joints without heat or redness. The deformity is characteristic but not serious (Heberden's nodes). It is not symmetrical. There are no trophic skin and muscle changes. Weight and general health are excellent. Constitutional tyre is often 1 or 2. The blood pressure is normal or elevated. There is no related heart lesion. Foci of infection may be present but removal seems not to affect the course of the disease. There is no fever.

The laboratory shows a normal red count and hemoglobin. The sedimentation rate of the red cells is normal. Gastric acidity is unchanged and the basal metabolism is not significant.

X-ray shows no periarticular change, and appreciable cartilage destruction. There is bone proliferation and usually condensation instead of demineralization. Gastro-intestinal x-rays are normal.

This is a relatively benign disease. The treatment is not difficult and results are quite satisfactory. It is important in treatment and prognosis to separate this group from the above two groups.

#### GROUP IV (SPONDYLITIS)

It seems wise to make a special grouping of spondylitis, which occurs in two distinct types—A and B. Type A (without bony ankylosis) and type B (with bony ankylosis).

Type A: This most interesting disease occurs only in young men. The onset is usually chronic and occurs between the ages of 20 and 30. The spine is the first and only complaint. There is neither heat, redness, nor swelling, but only pain-which is severe. There is usually limitation of motion in the spine and much muscle spasm. Deformity occurs early if not corrected and is characteristic in the loss of lumbar curvature and occurrence of dorsal and cervical kyphosis. There are few or no skin and muscle changes. Weight and general health are reduced; the constitutional type is that of 3 or 4; the blood pressure is low; and there is no heart lesion. Removal of foci of infection seems not to affect the disease at all. Fatigue is marked and a definite loss of fertility and libido is noticed early in the disease. In our series this has been almost universally true. No pregnancy has occurred in the wives of

these patients, though these men have been in the prime of life, and a number of instances have occurred where prolonged attempts to secure offspring have been unavailing. The laboratory shows a moderate anemia with rapid sedimentation time, low or absent free hydrochloric acid, a normal white count, and a normal basal metabolism. X-rays of the spine are striking for the absence of findings. Demineralization is present later in the vertebrae and occurs from disuse. The colon is tortuous and redundant. No one who has seen these patients can fail to recognize them. The longest case under observation has been twelve years,—this with pain and rigidity of the spine, but still no demonstrable bony ankylo-The treatment of these cases requires the utmost patience and time. Nutrition is the biggest problem in that progress is almost directly related to ability to gain weight. High vitamin diet, much baking and massage with carefully directed exercises are essential. Endocrine therapy may be helpful.

Type B: (with bony ankylosis) This disease occurred also only in men. The age of onset is 20 to 40 years of age, and the onset may be acute or insidious. The spine is the first and usually the only involvement, although shoulders and hip are sometimes implicated. Here again there is neither heat, redness, or swelling. There is pain only, and that usually not severe in proportion to the involve-There may be no deformity, there are no trophic skin and muscular changes, and the weight and general health may or may not be reduced. There is no special constitutional type. Blood pressure remains normal, and there is no heart lesion. Foci of infection are present and there is often a history of gonorrhea or prostatitis. Fever may occur in these patients, and the laboratory shows a wide range of values in red count, hemoglobin, white count, sedimentation time, gastric acidity, and basal metabolism. X-rays show no periarticular or cartilage involvement, there being only bone proliferation. The gastro-intestinal tract is not significant. Treatment in the case of these patients is limited to general constitutional management, the removal of obvious foci of infection, and prevention of deformity.

#### GROUP V

This group is often referred to as metabolic, traumatic, or menopausal. The age of onset is 40 or later, and it is insidious. There is no sex predominance. The first joint involved is a weight-bearing joint and is usually a hip or knee. Ordinarily there are not more than one or two joints involved and in this respect differs from type III. Pain and

swelling are present. There may be deformity, the involvement may be symmetrical, and there are no trophic skin and muscle changes. Weight and general health are excellent, and the patient is usually overweight. Constitutional type 1 or 2 is usual. The ' blood pressure is normal or elevated. There is no heart lesion and no significant focus. There is no fever. Laboratory findings are normal except that the basal metabolism is usually low. X-rays show cartilage destruction and may show slight bone proliferation later. This may be thought of as the group of overweight women who have painful One or both hips may also be involved. The treatment is simple and the results are gratifying. Reduction of weight by diet and bed exercises plus the use of thyroid, or thyroid and ovary, is usually all that is necessary. Traction to the extremity during a period of rest is often helpful.

We also include in this group the various specific traumatic joints; the riding master with arthritis alone in his hips, the watchmaker with involvement of the cervical vertebrae, the trap-shooter with arthritis of the shoulder, and many other similar conditions. Whether the trauma is the sole factor, or whether low-grade infection localizes at the site of the injury, we do not know.

GROUP VI

This group may properly be termed prearthritis, and in it are included all manifestations of neuritis, myositis, fasciitis, and bursitis. There is no standard age of onset and it is usually acute. The sites most frequently implicated are the neck, shoulders, and sciatic nerve. There is no heat, redness, or swelling in the joints though frequently severe pain is the complaint. There is no deformity, it is not necessarily symmetrical, and there are often trophic skin and muscle changes. Weight and general health are good, though fatigability is often increased. There is no special constitutional type. The blood pressure is normal, and there is no heart lesion present. Foci of infection are present, and most significant. There may be as yet no fever. Laboratory findings are usually normal. The x-ray is negative. Treatment should be concerned with improving the general health, and then radical removal of all possible foci of infection. Vaccines may be helpful.

#### DISCUSSION

The question of etiology has been deliberately avoided in this paper because we feel that our present concepts of etiology are not sufficiently clearly defined for such a paper as this. It is increasingly evident that one's constitutional background may determine the degree of severity of the disease.

It is wholly possible that the same type of stimulus may produce widely divergent manifestations in different patients. In other words, the soil as well as the seed may be a deciding factor in the type of disease manifest. It is because of this wide variation in behavior that the above clinical grouping has been suggested. We have mentioned infectious manifestations as being prominent in type II arthritis but this in no way precludes the possibility of infection playing some part in the other types. The difference in manifestations may be due to the individual. There are many valuable types of treatment not discussed as only very broad generalizations have been attempted. Each patient presents an individual specific problem in therapy. The subject matter of the paper has been limited to the simplest clinical considerations, and it is to the general practitioner that it is addressed, for it is he who will have the first opportunity to start the arthritic upon a constructive program, instead of the customary tour of various offices and clinics. He must protect his patients from over-zealous surgery, from dietary fads and sure cures, as well as a host of other useless things. Most probably it will be the family physican only who sees these patients early enough to prevent their crippling deformities.

#### SUMMARY

1. It is possible to separate the patients with chronic arthritis into significant groups by simple examinations.

2. These groups do have different indications for therapy and do not respond uniformly well to removal of all infectious foci. It is, therefore, well to evaluate a patient's problem early in the course of the disease if unnecessary radical and harmful procedures are to be avoided.

3. Prevention of deformity should be practiced early as well as faithfully throughout the entire disease.

4. We have found some such clinical grouping essential for the general management of our arthritic patients.

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This issue also has a number of interesting subjects such as: Carcinoma of the Stomach; Intrathoracic Tumors; Symptoms following Hysterectomy; Recovery After Cardiac Infarction; Treatment of Portal Cirrhosis; Relation of Diet to Health and Disease, etc.

### THE USE OF THE KIRSCHNER WIRE IN THE TREATMENT OF FRACTURES

W. L. ROGERS, M. D. San Francisco, California

(Read before the Medical and Surgical Association of the Southwest, at its Seventeenth Annual Session, held at Phoenix, Ariz., Dec. 3-5, 1931).

The Kirschner wire has come to play rather an important role in the modern treatment of fractures. For many years metal, either in the form of calipers or pins, has been used as an aid in obtaining the necessary traction in fractures of the long bones. There has always been considerable controversy among the members of the medical profession as to the desirability of their use, owing to the occasional complication which might arise.

Prior to 1927, the rustless steel wire was used very little. Kirschner discussed before the German Surgical Congress of that year his newly devised collapsible, harmonica-like drill, which made it possible to drill and guide the wire through soft tissue and bone in any desired direction. Since then, many ingenious devices have been made, as a result of which the application of the wire has been, to a great extent, simplified. When properly used, complications of any note are exceedingly rare.

It has been my good fortune, during the past two years, to visit the various men in central Europe who have been most instrumental in developing the instrumentarium and technic of wire extension.

Let us first consider in brief the instrumentarium. The wire should be made of chrome-plated rustless steel, with one end sharpened and the other end flattened to fit into the drill, the diameter varying from .5 mm. to 2 mm., depending on the amount of traction necessary. There are many drills

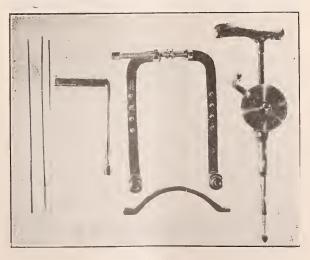


Fig. 1

at our present disposal, both hand and elec-Those with a telescope attachment are to be preferred, for with this type any vibration of the wire during the boring is avoided and an accurate guiding of the wire is possible. There are several U-shaped tractors available. One set that I have found very serviceable was recently put on the market by Stiefenhofer of Munich (Plate 1). A set consists of three U-shaped adjustable tractors of various sizes. One distinct advantage of this type is that the width of each tractor is adjustable. The wire adjustment is also exceptionally good. Beck, of Kiel, has devised a metal guard to screw on to the wire on each side next to the skin in order to prevent lateral motion. There are also several instruments available which act as guides, but, when one is using a collapsible drill, they are of little benefit.

Professor Klapp, of Marburg, has developed an ingenious apparatus which is excellent for difficult fractures of the tibia and fibula. It has the advantages of simplicity, readily obtaining the desired amount of traction and counter traction, adjusting the proper degree of rotation, and also overcoming any varus or valgus deformity.

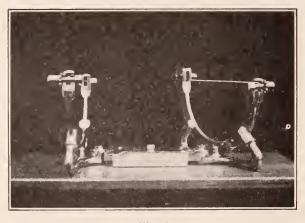


Fig. 2

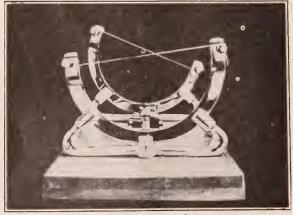


Fig. 3

From plates 2 and 3, the constituent parts of the apparatus are easily seen. It consists of two adjustable U-shaped tractors fastened on to a flat, fixed, screw mechanism, the former providing the necessary rotation or lateral correction and the latter, the necessary traction and counter traction. The treatment is extremely simple. A wire is first drilled through each end of the bone, then the U-shaped tractors are adjusted to the wires, after which they are fastened into the base of the apparatus and the desired extension is obtained with adjustments made as to rotation and latteral deformity, and so forth. The affected limb is thus suspended by two wires. This is very helpful during the after care when applying dressings, especially in the presence of large lacerations or suppuration. An addition to this apparatus may be made by suspending one or two wires with their tractors from attached stands, in order to stabilize and put in proper alignment a loose central fragment.

#### TECHNIC

Let us first consider anesthesia. The pain may be alleviated by general anesthesia or by local or regional analgesia. In all cases of recent fractures one may use local analgesia, and only in isolated cases is regional anesthesia necessary. In recent fractures a hematoma is present, which penetrates all the tissues in the vicinity of the broken fragments. It is sufficient to introduce the needle down to the broken fragments and to inject the solution, which is at once diffused into the hematoma. Thirty to fifty centimeters of 2 per cent novocaine is sufficient.

To determine whether the needle is in the hematoma or not, it is wise to detach the syringe to see if a red-colored fluid is coming from the needle. If the bone is broken in two places, or if more than one bone is broken, one must inject the solution at the site of every fracture. Also, in fractures where the displacement is small, it may be best to inject the whole circumference of the bone. In the case of compound fractures, one should insert the needle through healthy tissues. If the fracture is several days old, it is often better to use a brachial plexus anesthesia for the arm and a spinal for the lower extremity.

At the site where the wire or wires are to be drilled, a small amount of novocaine is injected, on the medial and lateral surface of the limb, through the skin and subcutaneous tissues down to the periosteum. The skin is painted with iodine, a small nick is made in the skin with a tenotomy knife before the wire is introduced. The wire is then drilled

and guided by means of the telescopic drill. Next, it is made taut in the U-shaped device. This is most essential as it prevents uneven pressure on the bone or soft parts. If one has the small Beck guards, these are next fastened to the wire in close proximity to the skin on each side, which prevents the possibility of any lateral motion. In the absence of the guards, one may use small pieces of felt or cork to accomplish the same purpose. When drilling near a joint, care should be taken to avoid entering the joint capsule.

If the wire is inserted with aseptic precaution, the tautness maintained, and any lateral motion prevented, it may remain for a period of several weeks with little or no tissue reaction.

Most men who have used the wire extensively believe the occasional case of osteomyelitis which has been reported, to be due to failure to observe the above, especially the latter, precaution. Depending on the type of the fracture and the purpose of the wire, permanent traction or temporary traction plus plaster, is applied.

#### INDICATIONS

The indications for using the Kirschner wire may be grouped as follows:

(1) As an aid in obtaining the necessary traction in selected fractures of the long bones of both extremities.

(2) As an aid in maintaining the proper alignment of the fragments.

(3) In the treatment of delayed union and pseudarthrosis.

Let us consider a few of the cases where the wire is of great aid in securing the necessary traction. First of all, in certain comminuted fractures of the humerus, or in fractures of the humerus complicated by dislocation of the shoulder joint, the arm is placed in a screw traction appearatus and a pull is applied on the U-shaped tractor holding the wire/which has been introduced through the olecranon.

For certain selected fractures of the shaft of the femur requiring traction, the wire may be drilled through the condyles or the tibial tuberosity. The limb is placed on a Braun's splint, with the foot of the bed raised some 25 to 30 cm. A 10 to 12 Kg. weight is applied. The foot is held in dorsal flexion by a small overhead weight (1 to 2 lbs.) Inward rotation is maintained by a bandage applied from the lateral side of the tractor to the Balkan frame. The normal foot is supported by a box and the mattress is supported underneath by boards.

For selected fractures of the tibia, the wire may be introduced through the calcane-

us or through the distal end of the tibia and fibula. The limb is supported on a Braun's splint. The U-shaped bar serves as protection against pressure from the blankets. A pad is placed under the heel in the popliteal space. A small box serves as support for the normal foot, and from 6 to 10 lbs. of traction is applied. The foot is supported in dorsal flexion.

In order to demonstrate the second indication for using the wire, that is, as an aid in maintaining proper alignment of the fragments, I think it would be worth while to discuss Bohler's treatment of severe fractures of both bones of the forearm.

After the local or regional anesthesia is administered, a wire is drilled through the ulna and radius, approximately two finger breadths above the wrist joint, with the hand in pronation. A second wire is drilled through the olecranon in a vertical direction. The arm is then placed in a screw-traction apparatus and sufficient traction is applied to overcome the shortening. After this is accomplished and proper alignment obtained, a plaster cast is applied by the use of two plaster splints, two wooden rods for the interosseous space, and one or two circular bandages, while the traction is being main-After the plaster has set, the Utained. shaped tractors may be removed, the surplus wire ends cut, and the remaining ends covered by cork tips and firmly imbedded in the plaster cast. These two wires which pass through the bones and which are fixed by the plaster casts, prevent the slipping back of the fragments.

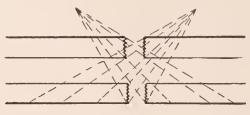
When I was visiting Bohler's clinic last fall, he had treated fifty-three such fractures in this fashion, with excellent results. He had not been forced to do an open reduction on any case.

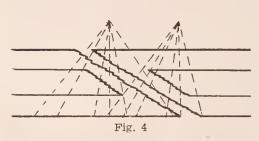
Another instance where the wire may be used as an aid in maintaining proper alignment is in the case of severe comminuted fractures of the tibia with a large loose central fragment. With such an apparatus as Klapp's, the proper extension may be obtained, and, by suspending two wires drilled through the proximal and distal ends of the loose central fragment, the proper alignment may be maintained either in the apparatus or when applying plaster and imbedding the wires in the plaster cast.

In regard to the use of the wire in delayed union and in pseudarthrosis:

Beck, of Kiel, was the first to suggest the use of the wire in the treatment of delayed union in tibial fractures, in an article which he published in 1929 in the "Centralblatt"

fur Chirurgie". After making a small skin incision in the vicinity of the fracture line, the wire was introduced and drilled through the ununited fragments several times, in the form of a fan, the drill holes radiating from the point of entry. When the first fan was completed, a second point was chosen and the procedure was repeated. In case of a transverse fracture, the two groups crossed each other at approximately right angles, and in the case of an oblique fracture, the medial holes crossed on an angle (Plate 4). He illustrated three cases in which he had used this procedure. They were all fractures of the tibia which had shown very little tendency to produce callus. One fracture was five months o'd, the other two over two months. Five to six weeks following the drilling, all had produced considerable callus and were well on the way to a good bony union.





He therefore wished to recommend this harmless and comparatively simple procedure for those cases which, after eight weeks or so, show no evidence of callus formation in the x-ray. He considered the procedure a happy medium between the most simple method of blood or other solutions injected at the site of fracture and the more radical procedures, such as bone splintering, and so forth. The stability already formed is very little disturbed. The resulting mixture of blood clot, bony and tissue substance, with the opening up of several channels in the fracture line, account for the early callus formation.

In July of last year, Bohler published an article in the same journal on the treatment of pseudarthrosis after the manner described by Beck. He presented a series of nineteen cases. Five were cases showing slow callus

formation. Following the treatment, they were all quite solid in 4 to 6 weeks. The remaining fourteen were cases of real pseudarthrosis, and all resulted in bony union. Some had previously been operated upon, one or two times, without success. A few of the points brought out in this article were: the possibility of treating ambulatory patients by this simple and harmless method if ordinary aseptic precautions are taken; the advisability of drilling many holes; the importance of varying the diameter of the wire according to the size of the bone to be drilled; and the necessity of having a drill which holds the wire firmly so that it may readily be withdrawn; and, when using an electric drill the necessity of maintaining a slow revolution of the wire, in order that the skin be not burned. Practically the only contraindication to the use of this procedure is in open infected fractures.

In conclusion, I believe the wire to be a very useful, comparatively harmless adjunct in the treatment of fractures, and that its usage has very perceptibly reduced the number of fractures requiring open reduction.

#### BALANTIDIC DYSENTERY RALPH W. MENDELSON, M. D. Albuquerque, New Mexico

Balantidiosis is sufficiently uncommon to warrant a short article on the condition. By some it is considered a tropical disease, but the affection is met with as frequently in the temperate zones as in the tropics, and no doubt more frequent and careful stool examinations would result in a greater number of cases being recognized. In the United States cases have been reported from New Jersey, Arkansas, Louisiana, Minnesota and North Carolina. A brief resume of the history, pathology and symptomatology is given below in connection with a case observed in a native of the state of New Mexico.

Balantidium coli is a protozoal organism belonging to the class CILIATA Party, 1852; sub-class Spirigera; order Heteroetrichida. It was originally discovered by Leeuwenhoek and later more fully described by Malstem. Stein referred it to the genus Balantidium (1862). The free motile forms (Fig. 1) are moderately active in the stools and show considerable variation in size. They average between 50 and 70 microns. The cysts are from 50 to 60 microns. The cysts retain their ciliary apparatus for some considerable time and may be seen actively rotating within the cyst wall. Transmission is through the medium of the cyst. Balantidiosis is common in pigs and probably man receives his infection from that source.

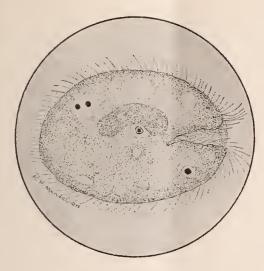


Fig. 1

Balantidiosis, generally speaking, is a chronic disease. In its pathology and clinical manifestations it is not unlike amebic dysentery. The ciliate inhabits the lumen of the gut, but has the ability to invade the intestinal wall and is therefore a true tissue parasite. Strong has carefully investigated the morbid anatomy and the lesions reported may not be differentiated macroscopically from the lesions produced by entameba hystolytica. The balantidia invade the submucosa of the large bowel (Fig. 2), an inflammatory reaction results with extensive round cell infiltration, necrosis and ulceration. Some observers have reported a mark-



Fig. 2

ed eosinophilia in the wall of the intestinal canal.

Although we may have acute balantidiosis in man, practically speaking patients seek medical advice after the disease has become chronic. As a general proposition it is insidious in its development and the following case history is more or less typical of the infection in man.

A male Mexican, a native of the state of New Mexico, age 48, applied for treatment on account of a distressing diarrhea alternating with periods of obstinate constipation. According to the history obtained he had been ill some two months. His previous history is irrelevant. His occupation is that of a farmer and for epidemiological completeness it may be mentioned that he has a small herd of pigs.

His present illness first manifested itself by an attack of diarrhea lasting about one week. This was followed by a few days of constipation and then another attack of diarrhea. Being snow-bound in the mountains, it was impossible for him to seek medical advice. He states that for the last three weeks he has suffered from loosenness of the bowels amounting to from five to ten motions in twenty-four hours. There is a moderate amount of mucopus in the stools; he has noticed no blood. Physical examination is negative except for his general appearance. He states he has lost a great deal of weight. He looks anemic and exhausted. There is a loss of appetite, some nausea and seldom a spell of vomiting. The red blood count is 4,000,000 with 70 per cent hemoglobin. The white count and differential are normal. The urine examination is negative. The blood-pressure is 90/60.

A specimen of stool is clay colored, macroscopically no blood, considerable mucus. A microscopic examination reveals considerable pus, some blood and numerous balantidia. Several subsequent examinations have failed to reveal any other intestinal parasite. with the exception of trichomonas, of no pathogenic importance.

An attempt has been made by the author to illustrate the appearance of the large

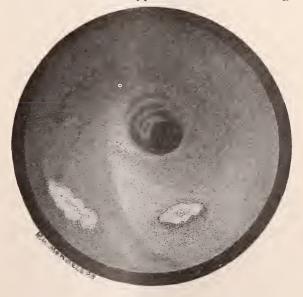


Fig. 3

bowel in the immediate vicinity of the rectum showing the characteristic ulceration (Fig. 3). It is stated that the parasite may enter the liver and encyst. Other complications are perforation, and, in cases that recover, partial obstruction as the result of contracting scar tissue in the healed ulcers.

As there is no specific treatment for this infection we are at considerable disadvantage in our efforts to afford the patients relief. At the present time our armamentarium consists of regulated diet, astringents and intestinal irrigations. In Siam the author has observed two cases, both terminating fatally.

## ALTITUDE CHANGES IN ARTIFICIAL PNEUMOTHORAX PATIENTS

E. A. GATTERDAM, M. D. Phoenix, Arizona

Here in the southwest, where marked variations in altitude occur between the principal towns, we are confronted many times with the seriousness of changes of residence in artificial pneumothorax cases. In other sections of the country these difficulties have not been encountered, but with the increased use of the aeroplane for pleasure and travel, these dangers we might say are universal. In 1928, I called attention to this phage of pneumothorax and stressed the importance of informing patients relative to this. Here in this section, as was stated, even short automobile rides over the mountains to neighboring towns are often times enough to cause serious damage to these patients.

With every 900 feet rise in altitude the barometer drops one inch or 25.4 mm. of mercury. With this decrease in barometric pressure, air volume correspondingly increases. Enclosed air tends to expand to equal the air pressure from without. Balloons released tend to explode when reaching the higher altitude and one should consider pneumothorax cases in the same regard. At the altitude of one mile, the barometric pressure is about 630 mm. of mercury as compared with 760 at sea level. This is about one-fifth less than that of sea level, so consequently the air will expand to six-fifths its volume at this altitude.

Assuming that an artificial pneumothorax patient has about 1500 cc. of air in the pleural cavity, elevation of one mile would cause an attempt at expansion to a volume of 1800 cc. In other words, it would be equal to a 300 cc. refill. If the change were 10,000 feet, the increase would be equal to 600 cc. Where there is a change from a higher to a lower altitude the reverse holds true and

there is a decrease in air volume or pressure in confined air as compared with the atmospheric pressure. With this in mind one can readily see where serious damage may be caused by an aeroplane ride or a trip into the mountains too soon after a pneumothorax refill.

While located in Prescott, Ariz., (altitude 5300 feet) too often we encountered patients who had been sent up there from the lower altitudes shortly after a pneumothorax refill. Pressure symptoms developed in many of these, and often were of a serious nature. Routinely all pneumothorax patients were watched very carefully after their arrival and their first inflation was delayed a week or more over the usual time for a refill. In many it was imperative to remove air from the pleural cavity as they had marked shortness of breath, rapid pulse and cardiac displacement. Soon many developed fluid due to the increased pressure. In all of these where air was removed, the pleural pressure was increased over their usual pressure, and with the advent of fluid this pressure was still further increased and required more than one aspiration. One case which I reported previously was fatal. In aeroplane flights where great altitudes are reached quickly, one can readily see that the danger is materially increased.

In changing from a higher to a lower altitude, patients in reality lose air and require a refill before their accustomed time. The following reports illustrate these types of cases:

Case 1. Male, white, age forty-one. Developed tuberculosis in 1930, right sided case with cavity. Pneumothorax instituted in 1931, in one of the coast cities, and has been continued. His compression was about four-fifths complete, adhesions being present. Phrenic exeresis done early part of this year. Cavity partially closed. His readings have been negative to positive and his refills about every 15-20 days when he takes about 600 cc. of air. Has felt well and able to attend to his business. Fluid occurred only once due to too large a refill in fall of This cleared in a short while. last year. arv of this year, he flew from the coast to Phoenix. This was the day following a refill of 600 cc. The ship attained an altitude of about 10,000 feet and he immediately developed marked shortness of breath and oppression in the chest. With decrease in altitude his symptoms became somewhat relieved. On arrival he went to bed because of difficult breathing and general malaise. Examination showed the heart slightly displaced to the left; patient was slightly dyspneic; temperature 99, and no fluid made out. No special treatment except sedative for malaise and cough. The following day he felt some better and at that time he was fluoroscoped This showed slight cardiac displacement to the left with fluid in the right pleural cavity. Expectant treatment followed. He was uncomfortable for a few days and said his chest felt tight. The fluid increased somewhat but in a few days he felt much better. He returned to his home by train. Later communication revealed that his cavity had become oblitrated but he still had some fluid remaining,

This case illustrates the dangers of aviation in these cases but also shows that value of increased pressures at times to close cavities.

Case 2. Previously reported. Male, white, age thirty-eight. Left side pneumotherax since 1920. Complete collapse obtained. Residing in Prescott for past three years and receiving refills every two weeks. Amount usually 300 cc. Initial manometer reading minus 2 to plus 1. Resultant pressure plus 4 plus 7. Patient insists on high pressure as he feels better with it. On January 28, at his usual time, he received 450 cc. of air. Readings were minus ½ plus 4. Resultant reading was plus 4 plus 7½. Thirteen days after last treatment he went to Phoenix, altitude 1200 feet. The following day, had a refill. Initial reading minus 3 minus 4 showed a considerable drop in pressure. He insisted on his usual pressure which required 750 cc. of air. He returned to Prescott in about a week with altitude at 5300 feet and noticed shortness of breath and tightness in the chest. Temperature normal but pulse increased. In a few day he felt normal. On February 28, three weeks after last refill, a pleural reading showed plus 3 plus 6, showing a marked increase over the usual. Fifty cc. of air given and the resultant pressure was plus 4 plus 7. Following this, he required the usual amount.

This case shows both the loss of compression on going from a higher to a lower altitude and the opposite effect in returning.

Case 3. Male, age thirty-six. Tuberculosis since 1928. Left sided case. Pneumothorax instituted on left side for hemorrhage. Compression about three-fourths complete. Refills taken about every three weeks. Pressure negative and he required 300-400 Six days before coming to Prescott cc. of air. (altitude 5300 feet), he had his usual pneumothorax at Tucson. (altitude 2400 feet). On reaching the higher altitudes, he developed pressure symptoms and when seen the next morning he complained of marked shortness of breath, mediastinal pain and backache. His temperature was 100.8, pu'se 110, and respirations 26. Said he thought he had a cold. Flucroscopic examination showed a full compression of the left chest with cardiac and mediastinal displacement; also fluid present. Aspiration was done and the initial manometer reading was plus 6 plus 8; 300 cc. of air was removed and the resultant pressure was plus 1 plus 3. Considerable relief was obtained. On the third day, he again developed pressure symptoms. Fluoroscopic examination still showed mediastinal displacement and fluid increased: 200 cc. of air were removed: reading still up; relief obtained. Temperature fell slowly and returned to normal in about two weeks, when fluoroscopic examination showed fluid to fourth rib. Pneumothorax instituted a week later; initial pressure zero minus three; 55 cc. of air given and pressure was plus one plus two. He had lost five pounds in weight. Later pneumothorax given at 5 to 4 week intervals and 800 cc. of fluid aspirated at one time. In time fluid disappeared and he has had no more discomfort.

#### CONCLUSIONS

Patients should be instructed frequently of the dangers in changes in altitudes during the course of their treatments, and should seek the advice of their physician when such changes are contemplated. Refills should

not be given just prior to going to higher elevation. Aeroplane trips should be avoided especially where they fly over 1000 feet elevation. In addition, where patients are changing from a higher to a lower altitude, they will require pneumothorax sooner than their accustomed time.

1. United States Veterans Bureau Medical Bulletin, July, 1928. 4:596 (July, 1928).

#### IMPLANTATION OF A BILIARY FISTULA INTO THE GASTRO-INTESTINAL TRACT

(Case Report and Two Year Follow-up)
WILLIAM RANDOLPH LOVELACE, M. D.
Albuquerque, New Mexico

(Read before the Panhandle District Medical Society, held at Amarillo, Texas, April 12 and 13, 1932.)

Though the occurrence of external biliary fistula has been recognized by surgeons and described in text-books for a long time, it is only within the last few years that attention has been given to plastic operations for its relief and correction. When the American Surgical Association met in Boston in 1917, it was addressed by Ellsworth Eliot, Jr. on "The Repair and Reconstruction of the Hepatic and Common Bile Ducts". In his paper Eliot made mention of six cases wherein a common duct which had become strictured was anastomosed to the stomach, and eighteen cases wherein it was anastomosed to the duodenum for the same reason. His review of literature also included one case reported by von Stubenrauch in 1906, in which the method consisted of dissection of a biliary fistula from the surrounding tissue and its anastomosis to the duodenum. The account concludes by saying, "The fistulous tract necrosed and subsequently an operation was done in which a new duct was successfully supplied by a plastic method."

There is no evidence in the literature that the possibilities of anastomosis between the biliary tract and the stomach or duodenum, in particular the employment of a biliary fistula, either spontaneous or artificial, for this purpose, received further consideration until five or six years later. Early in 1923, Frank H. Lahey of Boston published an account of an operation he had performed for o'diteration of a biliary fistula remaining after cholecystectomy. To the account of his own procedure he prefixed one of an intervention undertaken by Hugh Williams at the Massachusetts General Hospital ten years previously in the course of which a practically identical technic was employed<sup>2</sup>. So far as I have been able to examine the literature. no previous account of Williams' case had

been put in print. Much later, (June, 1929) Williams, in conjunction with Smithwick did publish an account of it, but as Lahey was most particular to give him full credit for priority, despite the fact that when Lahey did his first dissection of the tract he was in ignorance of Williams having preceded him, it is to Williams that the credit of first making use of the technic is generally accorded.

Williams' own account is of particular interest in that he is able to report the condition of the patient after the lapse of fifteen years. The patient was a child of four years when the operation was performed; when Williams' paper was published he was a student in the Law School, in his second year. During his later childhood and adolescence he has had occasional gastro-intestinal upsets, which culminated in an attack of acute appendicitis, for which appendectomy was performed February 19, 1927. Following this intervention the patient has apparently been as well as other young men. An abridged account of the original is as follows:

A fairly well developed boy of 4 years was admitted to the Children's Medical Service of the Massachustts General Hespital on August 28, 1912, with a diagnosis of mesenteric tuberculosis. There had been four to six vomiting attacks during the past two years; abdominal tumor had been present for at least two months; during most recent time (2 weeks) there had been anorexia, night sweats, fever, abdominal distention and loss of weight. After examination, a diagnosis of embryonic tumor of the right kidn y was made.

Operation by Dr. Hugh Cabot revealed a cyst of the liver adherent to the colon. Gall bladder and right kidney normal. All of the cyst wall could not be cut away, and after operation bile drained profusely from the r sulting sinus. The stools were clay-colored from the twelfth post-operative day. Various complications developed, retaining the child in hospital 81 days. When he was finally discharged practically all his bile was draining from the sinus. Large amounts of ox bile had been fed by mouth.

After five and a half months, the patient reentered the hospital, May 7, 1913. Within the preceding three weeks the sinus had stopped draining several times, each time the child suffered from nausea, vomiting and rise of temperature, the symptoms subsiding on r-establishment of drainage. On the afternoon of entrance black fecal material had been vomited, and a black tarry stool passed. On examination there was marked pallor, with several ecchymotic areas on extremities. Hemoglobin 35 per cent; clotting time 4½ hrs. The following day a blood transfusion was given, and the amount of oxgall administered rapidly raised from 12 to 60 grains. The child's general condition improved so that in 7 weeks he was considered ready for repair of the biliary condition.

Operation June 25, 1913, by Dr. Hugh Williams. Under ether anesthesia an incision was made about the old sinus and the abdomen opened by excising the old scar. An hour glass gall-bladder was removed. together with the cystic duct, which was tied with fine silk. When the adhesions about the fistulous tract had been separated it was found to be continuous with the common duct. The duodenum, lying near by. was normal. The gut was opened by a quarter-inch incision and an anastomosis made

between the duodenum and the end of the fistulous tract. An inner layer of No. 0 plain catgut, and an outer layer of fine continuous silk were used to make the joining. A Miller wick was placed to the site of the anastomosis, and the wound closed in layers. The stools passed the following day were of normal color, containing a large amount of bile. The patient was discharged for the second time after a stay of 40 days in hospital.

A more instructive case than this would be hard indeed to find. This patient has been under constant observation since early childhood, so the value of the procedure which I am engaged in discussing could hardly have a better demonstration. It is most surprising that it should have received so little attention, even its originator seemingly giving little thought to its surgical importance at the time when it was first performed.

Chronologically the next transplantation of a biliary fistula was that carried out by Howard Lilienthal on December 18, 1921. No printed report of this is to be found however, until June 1923. Lahey's first case was operated October 19, 1922 and reported in the Journal of the American Medical Association, March 31, 1923.

Lilienthal's patient was a woman aged thirty-one years, who had undergone cholecystostomy and drainage in 1917. Only two years of relief followed this intervention, so in the autumn of 1921 it was decided to remove the gallbladder at the same time the patient was treated surgically for a gynecological condition. This proved impractical, however, acute suppurative cholecystitis occurring two days after amputation of the cervix. For the relief of the biliary condition drainage was done at once, the common duct being incised and several stones milked out. A drainage tube was placed in the hepatic duct. Bile escaped from the wound left by this procedure for the space of two months. It was then concluded that the bile would not again flow through the natural channels, so on December 18, the fistulous opening was circumcised, leaving a thin collar of skin and the sinus freed from its adhesions. "When the stomach was reached the implantation of the sinus looked so feasible and tempting that it was decided to make the experiment."

At the meeting of the New York Surgical Society at which this case was described, Lahey was present as a guest, and in the discussion which followed he made mention of his own case and that of Williams, which had not at that time been published. His patient was a man of 28 years, who presented a common duct fistula, following operation for cholecystitis and pancreatitis. The gall bladder was removed and a drain in-

ser'ed down to the pancreas. The tube was withdrawn from the common duct at the end of 14 days; thereafter, all bile flowed through the sinus. Two and a half months later, the stools remaining clay-colored, the sinus was closed.

The outcome of this intervention was so satisfactory that Lahey very shortly employed it in two further cases, which he reported in December, 1924. His publications stimulated others to attempt repair in these discouraging cases of persistent biliary sinus, and other accounts of more or less successful operations of the same type began to be made public. Fordyce St. John's case is one of the most interesting. The operation was performed in the summer of 1924, but not reported until 1926. Cholecystectomy had been done for what "was evidently an acute exacerbation on top of an old chronic cholecystitis." The patient successfully weathered post-operative pneumonia, but the persistence of loss of bile through the fistula, necessitated administration to him of his own bil, which he took for a period of five weeks. On the eighty-sixth day after cholecystectomy,-

"a second operation was performed, at which the following pathology was noted: The great omentum and transverse colon, the liver, the duodenum and stomach were adherent. A probe introduced into the mouth of the sinus passed down immediately beneath the inferior surface of the liver, where the sinus tract was lost in dense adhesions. A 3 cm. longitudinal incision was made in the anterior wall of the stomach, after the tract had been dissected out for about 1 cm., the mucous membrane being sutured to the skin margin of the sinus throughout its entire extent. Musculature was later repaired to the margin of the sinus tract, and a bit of the great omentum lightly sutured over the anastomosis. The wound was closed without drainage. Primary union with no leakage of bile at any time.

One year after the second operation the patient had gained 60 pounds. He was symptom free, having no indig stion, his appetite was excellent and his bowels were moving daily without medicine; no suggestion of jaundice at any time. After 21 months he was still symptom-free, able to eat anything, and had not lost a day's work in 16 months."

Lahev remained the chief exponent of this particular procedure until some three years ago, when reports were issued from the Mayo Clinic concerning the operative work of Waltman Walters and his associates. In October, 1930, the Boston surgeon could tell of ten cases where he had transplanted a biliary fistula into stomach or duodenum. "Six of these", he tells us, " are well and free from symptoms. One has been a complete failure in that the entire external biliary fistula has returned. She will have another attempt at transplantation in three months more. One is a partial failure in that she is suffering from intermittent frequent attacks of biliary

obstruction or infection so that she does not enjoy life, and will probably require reestablishment of the external biliary fistula. Two died following operation." In a communication from Dr. Lahey, Feb. 1, 1932, he states "we have now transplanted fourteen biliary fistulae and while it is far from as nice an operation as we would like to have it, in such cases as we have employed it it has been the only operative procedure left to do".

Gatewood, in discussing Dr. Lahey's paper, reported three cases in which he had successfully implanted fistula into the stomach.

Whipple, in 1927, recorded two failures; one died within 24 hours from cholemia; in the second case, the tract was impaired during the procedure and a gastric fistula formed, then peritonitis developed, with death.

Roith, in 1924, reported a case of external biliary fistula which he implanted into the stomach and was well one month after operation.

Masson has never reported his cases but it was quoted by Lahey and Walters that he successfully implanted a fistula into the stomach.

In 1930, Roeder reported an implantation of a fistula into the duodenum with good results and patient was well four months after operation. He made a very interesting observation by sectioning a portion of the fistulous tract and finding it partially lined with glandular epithelium and advanced the possibility that the gland-like structures found looked similar to intestinal mucous membrane and could be an outgrowth of the bowel mucosa and be one of the causes why fistulous tracts have a tendency to remain patent.

The Mayo Clinic should probably be accorded precedence for laying emphasis upon the importance of plastic surgery of the biliary system, inasmuch as in 1905, W. J. Mayo treated a stricture of the common duct by making an anastomosis between the stump of the duct above the stricture and an opening made in the duodenum, a procedure which has been successfully utilized in a large number of cases since that time. But in the early months of 1928. Walters of that Clinic decided to use the method advocated by Lahey and the others already mentioned, and has lately given an account of five cases "in which purposeful external biliary fistulas were imp'anted into the stomach or duodenum for the relief of biliary obstruction due to stricture of the common bile duct, so extensive that there was not enough normal duct to enable anastomosis into the duodenum." Two of these gave results satisfactory to all concerned. There has been no evidence of further biliary obstruction, one patient having been under post-operative observation for two and a half years at the time report was made (April 1931). In two further cases the results were good, but not perfect, as is evidenced by occasional attacks of rain and jaundice, though the general health is vastly improved, and the symptoms, even when they do appear, are much milder than before implantation of the fistula. One patient died the fifth day after operation, from hepatic insufficiency and intra-abdominal hemorrhage. "She had been jaundiced for years prior to the transplantation of the fistula.'

Interest in this surgical procedure is not now confined to our own shores. From England comes a report of a succesoful implantation of "an external biliary fistulous tract into the duodenum." The author, George E. Waugh, feels that "in view of the rather surprisingly small number of cases that have been put on record,"-as quoted from Walters last publication—"it may be worth while to give the details of one more case of an external biliary fistula which was implanted successfully into the duodenum by the writer in February 1929. Although the patient is 74 years old, he is still, at the date of writing (October 1930), in excellent health." To this patient, perhaps more than any of the others whose cases have become rart of this record, the operation was peculiarly helpful, for in addition to the gallbladder condition, he had been left with a permanent incontinence of urine following prostatectomy. The author comments: "With two external fistulas his plight was very miserable, and although he was a high operative risk, it was decided to attempt the closure of the biliary fistula." The technic employed was the same as already described. A year and nine months later the old gentleman was still "wonderfully well", according to his family physician.

I have thus been able to find in the literature, thirty-two cases of implantation of a biliary fistula into the gastro-intestinal tract,—either duodenum or stomach. There would seem to be need of no apology for putting a thirty third on record, for the procedure is yet sufficiently unusual to make a wider knowledge of its practical application desirable. But before relating the details of my own case, I wish to mention some of the factors which the operators who have attained success feel are of importance in reaching satisfactory results.

It is the opinion of Walters that, given accurate implantation of the fistula, success

is probably conditioned by the state of the liver and the effectiveness with which the external fistula drains the hepatic ducts. If such pathologic conditions as cirrhosis of the liver and infection of the intra-hepatic branches of the biliary tract exist, it is likely that longstanding obstructive jaundice will be present as a complicating factor, and the results will inevitably be less satisfactory than when any such complications are absent. The surgeon who undertakes fistula implantation after a previous procedure has been done by another surgeon, almost always personally unknown to him, cannot often assure himself that the external fistula is adequately draining the hepatic duct.

The preservation of an adequate supply of nourishment to the tissues, is thought by Lahey to constitute one of the chief requisites for success. "The fistulous tract may be cored out of the abdominal wall, but should not be dissected free from the under surface of the liver, from which it doubtless receives a good deal of its nourishment, which in turn helps to prevent contraction." Cicatricial contraction is, of course, one of the uncertain quantities which are likely to disarrange the most carefully thought out surgical plans. The maintainance of patency, upon which the success of any such intervention must depend, is conditioned, in this procedure as in any dealing with a duct passing through scar tissue, by the fact that the secretory pressure of the bile, or other passing fluid, is greater than the contractile rower of the scar tissues of which its wall is composed. This operator reasoned that the same force which keeps an external fistula obstinately open, in spite of the most cunning surgical attempts to close it, ought to be effective in maintaining patency when the fistula has been implanted to the inside.

One aspect of the procedure, which seemed to Waugh to require special emphasis, is the necessity of preserving the whole of the fistulous tract intact until a preliminary dissection has revealed the exact rathological state of the biliary apparatus. In his own case, he says "only when all the structures in the matted gastrohepatic omentum had been dissected clean was it possible to realize that the whole of the common duct, common hepatic duct, cystic duct and gall-bladder had disappeared, and that the now isolated tract led from a lateral opening in the right hepatic duct to the surface of the body." Other operators have, in such an emergency, manufactured an external biliary fistula, as has already been noted.

We have it on the authority of Lahev that the production of a complete external biliary

fistula "is by no means a simple procedure." In four of his cases, a spontaneous internal fistula materialized, the duodenum or stomach attaching itself to the hepatic duct above the stricture. "In all four of these cases, the spontaneous fistulous canal was not of sufficient size to prevent back pressure and jaundice, and in each case it was necessary to detach these spontaneous fistulae and to establish complete external biliary fistulae." Of course, not all spontaneous fistulae behave in this way, but in most instances, even when drainage of the bile is physiologically ample for a while, contraction takes place later on, even when the external portion of the tract has healed, which will necessitate repeated operative intervention. If it is true that secretory pressure from within the duct is sufficient to neutralize and overcome the contractile power of the scar tissue wall, it is likely that the balance of control is within very narrow limits, and "when in complete external fistulae even a very small spontaneous fistula is established between the duct and the duodenum (or stomach), pressure within the fistulous tract distal to the spontaneous fistula becomes lowered and the ability of scar tissue in the external sinus tract then controls the situation," with resulting contraction and closing up of the sinus.

Because his experience taught him that such spontaneous internal biliary fistulae are at times the cause of failure of the external sinuses to remain open until they are in a condition suitable for dissecting out and reimplantation, Lahey attempted to prevent such an outcome by turning up the omentum over the duodenum and suturing its right free border to the posterior parietal peritoneum, at a point proximal to the passing of that membrane over the first portion of the duodenum, the pylorus and pre-pyloric area. He had tried this in but two cases when the report concerning the maneuver was made, and it was too soon to make possible a final conclusion as to its feasibility.

As to the preferable portion of the gastrointestinal tract for the introduction of the biliary fistulae, there seems to be no standard of opinion. Several operators intended to make an anastomosis between the duct and the bowel, but found such conditions after exposing the operative field that implantation of the dissected-out fistula into the stomach proved easier than the technic originally contemplated. Lahey believes the stomach should be employed by preference. He gives two reasons for this; (1) because the stomach is tolerant of the direct introduction of bile, as has been demonstrated by those of his cases where it had been used as the site of implantation, and has long been recognized in cases of cholecystgastrostomy for carcinoma of the head of the pancreas; and (2) because there is always possibility of leakage, which is of much less serious import in the stomach than in the intestine. Leakage during the recovery period does not by any means spell immediate and complete failure. This author has seen such leakage, presumably because the attachment to the sinus tract had been pulled off during a paroxysm of vomiting or coughing, but even when such leakage took place, the tracts have closed up and remained dry in several instances.

An accurate report on the number of cases in which the stomach or duodenum was used for the implantation can not be made because a detailed case report in some of the cases reported was lacking but there seems to be about an equal number of each type, with a tendency to a more frequent use of the stomach wherever possible in the more recent cases.

There has been considerable hesitancy on the part of the profession to accept the work of Oddi and Dastre which showed that bile in the stomach had little, if any, effect on the chemistry of digestion. This work has been repeated by Beavers and Mann of the Mayo Foundation and they have compiled sufficient experimental proof to offset any objection to side-tracking bile into the stomach

#### CASE REPORT

Chief Complaint: Biliary fistula; nine months standing.

Family History: Father died at 63 of pneumonia; mother died at 48, change of life; three brothers living, in good health; two brothers dead, one of accident, other of appendicitis; four sisters living in good health; two sisters dead, one of pneumonia, other in infancy.

Past Medical History: non contributory.

Present Illness: Patient had history of upper right quadrant pain at intervals, for past three years, with pain radiating to right scapula and shoulder region. The pain became more intense and the attacks more frequent. Was examined at Cleveland, December 28, 1928, and a diagnosis of chronic cholecystitis was made. In March, 1929, was operated upon at Charity Hospital, Cleveland. Operation was cholecystectomy. Great quantities of bile began draining from operative wound five days after operation and continued for nine months. On October 10, 1929, the draining sinus was curetted in a physician's office, but it did not materially affect the quantity of bile which drained from the fistula. On December 9, 1929, the patient came under our observation at St. Joseph's Hospital in Albuquerque.

Pre-operative Preparation: At that time he was extremely emaciated, anemic and great quantities of bile were flowing from the fistula. The patient was transfused with 500 cc. whole blood, Lindermann method, on December 20, 1929. Lipiodol injections into the sinus tract, revealed a direct con-

nection with the liver and no evidence of any remaining lower portion of common duct.

Operation: Under ether anesthesia, the fistula tract was cored out from the skin leaving as much tissue as possible around it and especially leaving intact at its attachments to the under surface of the liver, hoping to insure its blood supply. Exploration failed to reveal a lower portion of the common duct and on account of the adhesions, there was transplanted into the stomach two inches from the plyorus anteriorly and all of the available omentum, which was quite small, was sutured around the implantation. Penrose drain was placed to the site of implantation and incision closed in

Post-operative Course: The patient made an uneventful recovery and within 6 weeks after the operation, was out of the hospital and had gained 10 pounds. Stools being normal from the 6th postoperative day. He was kept on a mild Sippy regime for 2 weeks, the same as is used in any form of gastric surgery for the first 2 weeks. After that time, he was given regular diet without any untoward reaction and his course was smooth in every particular. In a communication from him, he stated that on April 1, 1930, 4 months post-operative, his weight was 161 pounds, a gain of 31 pounds since his operation. On April 1, 1930, he took up his usual duties in a busy real estate office in Cleveland and within a few weeks, he began to lose weight, losing 20 pounds within 30 days, with a return of slight icterus and itching and his stools became light in color. He was examined and was told that there was a slight obstruction of the duct. Diet and medication was prescribed. Symptoms soon subsided and he has had no return of symptoms of obstruction and regained his normal weight and has been in good health since.

#### BIBLIOGRAPHY

1. Eliot, Ellsworth, Jr. The repair and reconstruction of the hepatic and common bile ducts. S.

G. and O., 81, (January, 1918).
2. Lahey, Frank H. Implantation of biliary fistula into duodenum. Jour. A. M. A. 80: 893, (March

31, 1923).
Treatment of common duct biliary fistulae by anastomosing them into the intestinal canal.

Clin. North America, 4: 1483, (December, 1924).
External and internal biliary fistulae following cholecystectomy. Ann. Surg., 92: 649, (October,

1930).

3. Williams, Hugh; and Smithwick, R. H. Treatment of biliary fistula by direct implantation of the tract into the first portion of the duodenum. Ann. Surg., 89:942 (June 1929).

4. Lilienthal, Howard. Chronic biliary fistula: implantation of sinus into the stomach. Ann. Surg.,

77:765, (June, 1923).

5. St. John, Fordyce B. Late result of biliary fistula into the stomach. Proc. Staff Mtg. Mayo

stomach. Ann. Surg., 83: 855, (June, 1926).) 6. Walters, Waltman. Complete stricture of the common and hepatic ducts treated by transplantation of external biliary fistula into the stomach or duodenum; report of five cases. Jour. A. M. A. 96: 1121, (April 4, 1931).

Transplantation of an established external biliary fistula into the stomach. Proc. Staff Mfg. Mayo

Clinic, 5: 148, (May 28, 1930).

7. Gatewood. Discussion of Lahey's paper. Ann.

8. Masson, J. C. Copied from Walter's article. Jour. of A. M. A. 96: (April 4, 1931).

Roeder, C. A. Transplantation of biliary fistulas into duodenum. Ann. of Surg. 91: 144-147; (Jan-

uary, 1930). 10. Mayo, W. J. Some remarks on cases involving operative loss of continuity of the common bile duct, with report of a case of anastomosis between the hepatic duct and the duodenum. Ann. of Surg.

42: 90-96, (July, 1905).

Restoration of bile duct passages after serious injury to the common or hepatic ducts. Surg. Gynec.

Obst. 22: 1-6; (January, 1916).

11. Waugh, George E. Transplantation of an external biliary fistulous tract into the duodenum. British J. Surg., 18:581, (April, 1931).

#### ACUTE NON-DIPHTHERIC LARYNGO-TRACHEO-BRONCHITIS WITH TWO FATALITIES

(Case Reports) HARRY LEIGH, M. D. El Paso, Texas

(Read Before the El Paso County Medical Society, El Paso, Texas, February 8, 1932.)

While the occurrence of acute laryngotracheo-bronchitis has practically always been considered a complication of some respiratory infection, increasing numbers of these cases would seem to admit this condition occasionally as a clinical entity. Since reporting four fatalities due to acute nondiphtheritic obstruction in 1926, many cases have come to my attention but only recently severe enough to cause death. In spite of the appearance of many papers on the subject in pediatric and oto-laryngology sections there has been little special information added regarding etiology, pathology or treatment. Doubtless this is a fairly old malady, in fact medical historians are now quite convinced that George Washington died of such an affection. As far back as the earliest epidemics of severe diphtheria and other infections, this doubtless occurred and was never differentiated from the disease caused by the Klebs-Loeffler bacillus.

Case No. 1., Baby B., age 4 years, male, American. Father had active tuberculosis. Child never had been seriousy ill and had practically always been free of colds. A physical examination showed a beautifully developed child, fine clear skin, large prominent thorax, fine hair, and a build suggestive of the thymo-lymphatic cases. Late in August, 1931, following a cool change in the weather, the onset was noted as a cough attack about 4 a.m. By phone the mother was advised to give a simple treatment that resulted in quick relief. He ate breakfast and played about the house until about 10:30 a. m., when the mother noticed a recurrence of symptoms. I saw the child immediatey and found two degrees of temperature but no redness of the throat. Diffi-cult noisy breathing was noted. The accessory musclec of respiration were being used in the effort to get air. Small doses of morphine and atropin, and ephedrin sulphate along with a croup tent inhalation seemed to give considerable relief. Recognizing the possible gravity of the situation a nurse was put on the case and Dr. J. A. Rawlings called as consultant. This method of treatment seemed to be doing all that could be expected. I saw him several times during the day and about dark he looked very much better. About 8:30 p. m. a call reported a cyanotic attack and upon arriving the patient lcoked very ill. cyanotic, weak, and a cold sweat covered his body. The patient was taken to Providence Hospital where a tracheotomy was performed at once by Drs. Schuster and Schuster, with little

needed local anesthetic. A little relief was noted, but not the spectacular relief of a diphtheritic laryngeal obstruction. When placed in bed he began struggling frantically and raised up and fell back dead. Cardiac function appeared to have stopped for some time before respiration ceased. No evi-dence of membrane could be seen. Only bloody, frothy fluid in the tracheotomy wound suggested an inflammatory edema. Laryngeal and tracheal cultures showed pneumococci and staphylococcus aureus. Autopsy was refused.

Case No. 2, Baby C., age 16 months, male, white, fourth child of healthy parents. The whole family had been ill with so-called "flu" for several days, and this child had begun running temperature early one morning in January, 1932. I was called about 9:30 a.m. The baby appeared dyspneic, and a subcyanotic hue was evident. No redness of the throat was visible. A general physical examination showed a beautifully developed child of the thymo-lymphatic build, clear fair skin, finely moulded body, fine hair, and exceptionally good nutrition. Realizing a possibly serious termination, I warned the parents of the danger. Treatment instituted as in Case No. 1, seemed to give quick relief. In about two hours I was summoned to find the baby in extremis, cyanotic, with shallow breathing. Adrenalin gave a short respite, when he began struggling, turned more pink, sat up and then dropped over dead-Again cardiac failure seemed to have preceded the respiratory arrest. A culture of the larynx showed a pure culture of staphylococcus aureus. Autopsy was refused.

Both cases present dual findings as to build, development, course and termination of the disease. In the preliminary study, those cases that died and came to autopsy showed excessive lymphatic distribution, as well as excessive thymuses. Many cases have occurred in my practice and recovered but they were not of this previously noted type of build and development. However, when it is remembered that the lesion may rest anywhere from the larynx to the bronchi, or involve the whole tract as an acute inflammatory edema or even a diffuse exudative swelling, the patients most favorable to treatment are most certainly not the type of children just described. Undoubtedly the child itself is as important a factor in the prognosis as is the acuteness of the infection. It may be well to regard any child, especially infants, with an acute laryngo-tracheo bronchitis with respiratory embarrassment, as seriously ill until proven otherwise.

#### DISCUSSION

DR. W. E. VANDEVERE: Cases of this type I consider more serious than cases of diphtheria, because in diphtheria we have the specific antitoxin, which if given reasonably early is pretty sure to effect a cure, whereas in these cases, despite all that can be done for the child death may ensue. Respiratory distress from obstruction in the larynx is generally a most important symptom. Usually it is a very simple matter to look into the throat, but in most of these cases the child is unconscious when we are called in and it is a question to how to get in the throat and do a tracheotomy as soon as possible so the child can breathe. It is very important to know when to do a tracheotomy; we always preach about doing them early, but generally are

not called until the chid is exhausted and the larynx

is intensely inflamed and congested.

DR. F. P. SCHUSTER: Dr. Leigh deserves a great deal of credit for calling attention to these cases and also for working out the pathology. I remember half a dozen or more cases back in the latter part of 1918, during the influenza epidemic, in which the principal symptoms were severe dyspnea and cyanosis with very few chest findings and which were sent in for tracheotomy, which was done on every case, usually as an emergency. All these children died and as a result we were called on the carpet for doing tracheotomies in cases where the pathologist did not think it was indicated. Since that time, and in the cases Dr. Leigh has reported, it would seem that the value of tracheotomy is questionable. Dr. Leigh failed to report the cases that he has cured, but we know that some of them do get well. It is my opinion that in these cases there is a severe toxemia and this toxemia is so overwhelming that in spite of the relief from the laryngeal obstruction, the child is not able to overcome the toxemia. Removing the secretion from the bronchial tubes and trachea aids the child but is not successful in saving it when the stage described by Dr. Leigh has been reached. Recently Dr. E. B. Rogers had a case where the obstruction came on suddenly. I refused to do a tracheotomy on account of my previous experiences and recommended medication, sending the child home. Several days later Dr. Rogers phoned that the child was in good condition, and recovery soon followed.

DR. M. P. PALMER reported the case of a child, fourteen months old, in which emergency tracheot-omy was performed and the child seemed to be improving for 24 hours, then suddenly collapsed and stopped breathing.

DR. HARRY LEIGH, closing), stated these cases were extremely difficult to handle in that the family must be treated as well as the child and referred to the present-day insufficient dress fad as a possible reason for many of the colds and infections with which children become afflicted.

#### CLINICAL CASE REPORT

Traumatic Hydronephrosis of Left Kidney and Abscess of Right Kidney with Stone

> KELVIN D. LYNCH, M. D. ROBERT F. THOMPSON, M. D. El Paso, Texas

(Read Before El Paso County Medical Society, March 14, 1932.)

M. B., age 10, admitted Oct. 15. This lad was struck in the abdomen by a playmate at school and was rendered unconscious for a few moments. When brought to the hospital shortly afterward there was pain throughout the abdomen, especially on the left side. There was no rigidity of appreciable significance nor was there any vomiting. A little later he developed hematuria, which lasted three or four days, along with some elevation of temperature which was attributed to an upper respiratory infection present at this time. After remaining in the hospital for ten days he was symptomless with clear urine, no fever, and he was allowed to go home being apparently all right.

Five weeks later he was returned to the hospital where he was observed to have a large mass in the left loin and with persistent hematuria. The mass was painful and tender. It was thought at first that a renal tumor was being dealt with. A plain x-ray showed the enlarged left kidney with a stone shadow in the region of the right kidney. There was no obliteration of the psoas shadow. Upon cystoscopy the catheter in the left side was stopped at 20 cm. Following this ureteral catheterization the mass in the left loin disappeared in about twentyfour hours. When the pyelograms were studied there was seen an obstructed left ureter and a constriction of right ureter. The shadow, presumably of renal stone, remained in the right kidney area. There had never been any symptoms referable to the right kidney and by its position it was thought at first that the shadow might be that of a large gall stone.

From the obstructed left ureter demonstrated by pyelography with resulting hydronephrosis it was the impression that the urinary organs on the left side had been damaged by trauma. Intravenous pyelography at this time showed the left kidney to have some secretory power. Under ether anesthesia operation was done Dec. 15th. The pathology exposed was a tight stricture of the ureter about an inch and a half below the pelvis and a right angle kink just above this point. The entire uretero-pelvic area was buried in dense adhesions. The kink was straightened; adhesions dissected away and ureteroplasty effected upon the stricture. The ureteroplasty was performed by excising the scar tissue of stricture leaving a bridge of ureter and suturing this transversely. A small rubber catheter was passed down ureter from pelvis, the upper end being brought out through wound in loin for drainage.

The convalescence following this operative procedure was quite satisfactory. Cystoscopy Jan. 18, 1932, showed the plastic work upon the pelvis to be all right and that the kidney was functioning well. There were only a few pus cells in the urine. The x-ray plates at this time still revealed the stone in the right kidney area which was apparently causing no trouble.

Suddenly, during this satisfactory convalescence, periodic seizures of high temperature along with pain and tenderness in the right side manifested themselves, associated with vomiting at intervals. This was at first ascribed to infection having been stirred up in the left kidney, by the pyelography of Jan. 18, but further study showed the pain and tenderness to be solely on the right side.

For the relief of these painful symptoms referable to right kidney, operation was done on this side under either anesthesia Jan. 28. The kidney was exposed by loin incision and a large cortical abscess was seen in the mid-portion extending through into pelvis. Upon opening the pelvis pus welled forth and the stone, which was blocking the pelvis, was removed. The abscess cavity was drained by insertion of tissue drains and a small catheter was left in pelvis and brought out through the wound.

The recovery from both operative procedures has been speedy and uneventful. He left hospital one month following last operation. The wounds are now healed and cystoscopy at the present time, March 12, showed the urine from each kidney to be clear with few remaining pus cells, and each ureter to be free from obstructions.

This case is of interest in that it shows a child of ten years with pathology of different nature in each kidney at the same time:

Left kidney—1. Traumatic injury to ureter and pelvis with resulting infected hydronephrosis.

Right kidney—1. Stone in right kidney. 2. Cortical abscess and infected hydronephrosis due to blocking of uretero-pelvic junction by stone.

As all the cystoscopic work on this boy was done under local anesthesia it illustrates the ease with which reported examinations can be made, as needed, upon children using the small caliber instruments without subjecting them to general anesthetics which, if repeatedly employed might injure materially their already damaged excretory organs.

#### CASE REPORT OF ATELECTASIS DUE TO FOREIGN BODY

W. E. VANDEVERE, M. D. El Paso, Texas

(Presented before The El Paso County Medical Society, Jan. 25, 1932.)

On the 29th of November, 1931, Dr. J. Armstrong of Douglas, Arizona, phoned me that a Mexican girl, three years of age, had two days previously strangled on a bean, and had been coughing and showing signs of bronchial irritation since that time. The breath sounds were heard faintly over the right chest. He had made an x-ray picture, which showed an atelectasis of the right lung, and his diagnosis was a foreign body obstructing the main bronchus of that lung. Dr. Armstrong's alertness and keen insight into the pathology and mechanics involved was the cause of saving the child's life.

This case is of special interest inasmuch as it shows perfectly what happens when the main bronchus to a lung is completely obstructed. The air is absorbed and serum is poured into the alveoli and bronchioles, resulting in the so-called "drowned lung". The trachea and heart are pushed to the obstructed side and the intercostal spaces are narrowed. The volume of the opposite lung is increased, and becomes more transparent to the x-ray, and the intercostal spaces are widened.

It is only too easy, with suppressed breath sounds and an opaque lung, to make a diagnosis of pneumonia, and many such cases have died with the belief that such a condition existed. Of course, an opaque foreign body offers no such diagnostic difficulty.

The child arrived in El Paso the night of the 29th. Temperature was 101°, and the feeble breath sounds heard over the right chest probably were referred from the left lung. With the patient under ether anesthesia, the bronchoscope was passed, and a bean was found blocking the right main bronchus.

It was found that the swelling of the raw bean from the moisture of the lung was sufficient to block the bronchus so completely that no forceps could be made to grasp the bean. The bean was easy to see but most difficult to remove. After about an hour I was able to bite off a piece of the bean with a small forceps and, by removing many small pieces, I soon had all of the bean out. With the aspirator I then removed all of the mucus and serum which poured into the bron-

chus from the lung. The child began to breathe better and breath sounds were heard as well over the right as over the left lung.



Fig. 1



Fig. 2

Three out of four beans I have removed from the bronchi were removed in small pieces. Only one was removed whole, and that had not been in the bronchus long enough to swell.

Fig. 1 shows the condition before removal of the bean, and Fig. 2 shows the appearance of the lungs twelve hours after removal.

The child was slightly croupy the next day but was allowed to go home on the second day and made an uneventful recovery.

#### EPIDEMIC ENCEPHALITIS

Case Report
HARRY D. ATWOOD, M. D.

(Presented at the monthly staff meeting of the Good Samaritan Hospital, March 28, 1932.)

Case No. 12004, was admitted to Good Samaritan Hospital at 6:15 p. m. July 20, 1931. He was first seen on the previous day when he was taken suddenly ill with nausea and vomiting and a moderately high temperature. In a few hours he became semicomatose and restless, resentful of any attempt to move or disturb him. He presented a dull apathetic look and could be aroused from his stupor with difficulty. The following day he was somewhat less stuporous but nausea and vomiting continued and he was brought to the hospital.

Two uncles of this child had had tuberculosis; one sister died in the hospital of diabetes mellitus on the day prior to his admission. Otherwise the family history is negative.

On admission he was restless, tossing from side to side, and occasionally crying out. The pupils were widely and unequally dilated, but reacted to light. The skin was dry, and the mouth, lips, and tongue dry and parched. Moderate stiffness of the neck was noted which increased markedly during the next few days. Heart, lungs and abdomen were negative. The patellar reflexes were normal; Kernig's sign was present. There was hyperesthesia and pain on moving the back or limbs. On admission the temperature was 101.4, and for the following five days remained between 100 and 102. Spinal puncture was done and about 5 cc. of clear fluid withdrawn under moderate pressure. The cell count was 70, equal numbers of polymorphonuclear leukocytes and lymphocytes. Globulin and sugar contents showed a slight increase. Culture showed no growth and smears were negative to tubercle bacilli or other organisms. Sodium chloride was 690 mgm. The white blood cell count was 17,200 with 79 per cent polys and 21 per cent small mononuclear lymphocytes. Hemoblobin was 90. Urinalysis was negative except for a slight trace of albumin.

Lethargy, restlessness, hyperesthesia, rigidity of the neck, and unequal dilatation of the pupils continued for four days after admission. The temperature then dropped below 100 degrees, and gradually to normal. He aroused from his stupor, accepted nourishment, took an interest in his surroundings, and talked for the first time since the beginning of his illness. Daily lumbar punctures showed a gradual drop in the cell count with little chemical change. Smears and cultures continued regative. With improvement lumbar puncture was discontinued,

After the lapse of a week, during which time he was practically free from symptoms and was about

to be released from the hospital, nausea, vomiting, and stupor again returned, and the temperature rose to 101. Spinal puncture was done and the spinal fluid again was found under pressure with a cell count higher than originally encountered. This reriod of relapse was of one week duration and the symptoms and spinal fluid findings were practically a repetition of those originally met with. All symptoms again subsided except a temperature which fluctuated between 99 and 100 degrees, and the child was released from the hospital on August 10, not however without misgivings as to the possibility of another relapse. However, a gradual improvement took place with no recurrence of symptoms, and four months later he was apparently perfectly well.

The chief interest in this case is in the diagnosis, which lies between poliomyelitis of the abortive type and encephalitis, with more evidence, I believe, in favor of the latter. A diagnosis of encephalitis is always a matter of difficulty and must, in all cases, be made by a process of exclusion. Those conditions most difficult to exclude in this particular case are tuberculous meningitis, other forms of mild meningitis and poliomyelitis. Tuberculous meningitis has probably most often been mistaken for encepha-The onset and initial symptoms may be similar and, during this stage, examination of the spinal fluid is of the most help. In encephalitis the spinal fluid varies little from the normal, except for a slight increase in the cell count and a preponderance of lymphocytes. Cultures are negative smears show no organisms. There is usually little change from the normal in the globulin and sugar content. In tuberculous meningitis a flocculent clot will be found as a rule in the spinal fluid after standing a few hours in which the tubercle bacillus may be found. The protein content will usually be increased as well as an increase in the lymphocytes. The chlorides are diminished and the sugar lowered or absent, all of which will help in differentiating this disease from encephalitis. It is to be borne in mind, however, that while in tuberculous meningitis the sugar content of the spinal fluid is invariably low or absent after the disease is well advanced, in the early stages it may be normal or even increased. Tubercle bacilli may not be found and inoculation of guinna pigs is too slow for other than a confirmatory measure. As a rule the cell count in tuberculous meningitis is higher than that in encephalitis, although the lymphocytes predominate in both conditions, in this respect also resembling poliomyelitis. In tuberculous meningitis the determination of the cerberospinal fluid sugar is of special importance. It has been stated that a reduction of the sugar content below 30 mgm. per 100 cc. provided the fluid be clear, is virtually pathognomonic of tuberculous meningitis. Next to the actual demonstration of the tubercle bacillus, in the experience of many workers, this reduction in the sugar content of clear cerberospinal fluid, constitutes the strongest evidence in favor of a diagnosis of tuberculous meningitis. Lastly, tuberculous meningitis almost invariably progresses to a fatal termination, often however with intervals of improvement, while encephalitis, although grave as to the prognosis, terminates in 60 to 80 per cent of the cases in recovery.

Encephalitis may be confused in its early stages with meningococcic and other forms of meningitis. We should expect to find here, however, a more marked leucocytosis with polymorphonuclear increase, and culture and smear of the spinal fluid should demonstrate the causative organism. The cerebrospinal fluid while it may be clear carly in meningitis, is usually turbid, showing a high cell count and a preponderance of polymorphonuclear leucocytes reaching 80 to 100 per cent, the reverse holding true in encephalitis.

Encephalitis and poliomyelitis are very closely related as regards clinical symptoms and cerberospinal fluid findings. I am referring here to the early stages of poliomyelitis before paralysis has developed, or to the abortive type with no paralysis which may so easily pass undiagnosed. In poliomyelitis a sudden paralysis may develop with no prodromal symptoms, or, as more often happens, paralysis appears two or three days after the onset of symptoms. There is little difficulty here in the diagnosis. In these abortive cases the general bodily infection with the virus occurs, but either does not reach the nervous system or affects it so little as to cause no characteristic symptoms. may be slight nervous symptoms such as rigidity of the neck, and pain in the neck, back, and limbs, but there is no paralysis and recovery takes place in a few days. Because of the slight and evanescent effect on the nervous system and the mildness of the symptoms in these abortive cases, it is hardly possible to detect them except in epidemics. The picture presented by the spinal fluid is very similar to that found in encephalitis. It is clear, usually under pressure, globulin is increased while the chlorides and glucose are present in normal amounts. There is the difference, however, that in the pre-paralytic stage the cells present are chiefly polymorphonuclears. the development of paralysis this condition rapidly changes and a lymphocytosis develops such as we have in encephalitis. The number of cells may be moderately or greatly increased, and after the first week of the disease, there is a tendency for the cell count

to approach normal. Cultures are sterile and no organisms are found on microscopic examination of smears. In the cases in which paralysis develops, the localizing signs and the persistence of the paralysis are in favor of poliomyelitis while more evanescent paralysis favors encephalitis.

Among other conditions which may at first simulate encephalitis in children are influenza, pneumonia, typhoid fever, meningitis secondary to ear disease, enteric fever and possibly uremia. However, persistence of nervous symptoms and examination of the spinal fluid will usually rule out these conditions early.

In this particular case, there are a number of factors which may be interpreted in favor of a diagnosis of abortive poliomyelitis, Among these is the seasonal prevalence; poliomyelitis usually occurs in the summer and autumn months, when this case developed. Encephalitis as a rule is most often seen in the early months of the year. Also the fact that the spinal fluid findings are not conclusive in either disease. Further, that poliomyelitis is chiefly a disease of childhood and much more prevalent than encephalitis; while the latter is a disease of any age and not so commonly met with. Opposed to these facts are the course of the disease as seen in this case, the severity and the persistence of the lethargy and nervous symptoms and the relapse lasting longer than the original attack, with no evidence of paralysis which we could hardly expect to see in poliomyelitis.

#### DISCUSSION

DR. ORVILLE H. BROWN: There is little that I can add to Dr. Atwood's presentation. I saw this patient a number of times. Our first thought was that we had to do with tuberculous meningitis. The fact that the child was desperately ill and yet re-

covered rules out tuberculosis.

There is no dispute as to the diagnosis of encephalitis. As stated by Dr. Atwood, there are certain facts in favor of the diagnosis of an encephalitic type of poliomyelitis. In looking up the literature on the subject of encephalitis and poliomyelitis, I find that a number of workers are of the opinion that the two diseases may be due to one virus—the difference in manifestation being due to the site attacked. A tremendous literature has accumulated, even during 1931, on encephalitis especially in Europe.

Strumpell' was the first to suggest that encephalitis, especially in children, was due to the virus of poliomyelitis. His cases were characterized by abrupt onset, fever, nausea, vomiting, convulsions and several days' stupor. The convulsons were usually unilatteral. Later came upper neuron parameters. ralyses, usually only a weakness. Medin' agreed with Strumpell. Burrows', Maggiore and Sindoni', Peabody, Draper, and Dochez are others who think the one virus causes both encephalitis and poliomyelitis. Neustaedter, Larkin and Banzhof<sup>6</sup> carried out a series of experiments the results of which went to prove that the protective power of serum

from one disease also acts against the virus of the other.

Amoss, on the other hand, thinks that he has demonstrated that the blood serum of encephalitis does not neutralize the virus of poliomyelitis.

The Collective Investigation Committees of the New York epidemic of 1917 admits that there may be a cerebral type of poliomyelitis though none occurred in that epidemic. Barker suggests the cortical type is that of an infantile cerebral palsy. Wickman 10 after an extensive experience with the Heine-Medin disease says it may cause encephalitic changes. Walker and McKenzie<sup>11</sup> say none of the cortical type occurred in the Detroit epidemic of 1925. Wickman, Romer<sup>12</sup> and Zappert<sup>13</sup> have described cerebral changes in the usual form of poliomyelitis. Holt and Howland14 however omit a description of a cerebral type in their text book. Neal and Abramson<sup>15</sup> found cerebral changes in 14 of 37 cases of poliomyelitis of the 1916 New York epidemic, but the changes in each case were slight as compared with the cord pathology.

Williams<sup>16</sup>, Marie<sup>17</sup>, Parkes Weber<sup>18</sup>, Zappert<sup>13</sup> and Lovett10 have reported cases of poliomyelitis which exhibited both spastic and flaccid paralyses, which seems to be positive proof of both upper and lower motor neurone invasion.

Philip E. Rothman<sup>20</sup>, after a careful review of the literature is of the opinion that poliomyelitis and epidemic encephalitis are two distinct phenomena but admits that cerebral changes may develop

in poliomyelitis.

Although Edwin Bramwell<sup>21</sup> makes the statement that judging from the literature epidemic encephalitis is uncommon or at least seldom recognized, Griffith and Mitchell<sup>22</sup> say it is common in infancy and childhood as reported by Heiman<sup>23</sup>, Comby<sup>24</sup>, Moore<sup>25</sup>, Nral<sup>26</sup>, Hofstadt<sup>27</sup>, Duzar and Balo<sup>28</sup>, and many others. In many of the epidemics reported as high as 40 to 50 per cent have been under 15 years of age. The tendency of encephalitis to occur in winter months and in epidemics, and being rarely sporadic argue against the diagnosis of encephalitis. This case certainly had no paralyses and no discovered muscular weakness. The fact that there was a relapse might be thought to support the diagnosis of poliomyelitis, the relapse period corresponding to the usual paralytic stage. We believe however, that the absence of the paralysis and muscular weakness is strong argument against the diagnosis of poliomyelitis, and, further, the general belief that cerebral changes only in poliomyelitis are unlikely, causes us to conclude that this is a case of epidemic encephalitis.

#### REFERENCES

1. Strumpell, A.: Jahrb. f. Kinderh. 22:173, (1884) from Neal, Abramson, Peabody, Draper and Dochez. 2. Medin: Arch. de Med. d. enf. 1:257 and 321,

(1898); Peabody, Draper and Dochez.
3. Burrows, Montrose T.: Arch. Intern. Med., 26:477, (1920).

4. Maggiore, S. and Sindoni, M.: La Pediat., 19:-

681, (1921).
5. Peabody, F. W., Draper, G., and Dochez, A. R.:
Monographs of Rockefeller Institute for Medical Research, New York, (1912).

6. Neustaedter, Larkin and Banzhof; Am. Jour.

Med. Sci. 162:715, (1921).

7. Amoss, H. L.: Trans. Association for Research in Nervous and Mental Disease, 1921, p. 225, (from Griffith and Mitchell); and Journal Exp. Med., 33:187, (1921).

8. The Collective Investigation Committee on the New York Epidemic of 1907 on Epidemic Polio-

myelitis, Nervous and Mental Disease: Monograph, No. 6, Washington, D. C., Nervous and Mental Disease Publishing Company, 1910, p. 53, (from Rothman).

9. Barker, L. F.: Monographic Medicine, New York, D. Appleton and Company, 2:398 (1917),

(from Rothman).

10. Wickman, Ivan; Monograph, No. 16, Washington, D. C., Nervous and Medical Disease Publishing Company, 1913, (from Rothman).

11. Walker, John Taylor and McKenzie, Earle D.:

Ann. Clin. Med. 5:149, (1925).

12. Romer, Paul H.: Die epidemische Kinderlahmung, Berlin, Julius Springer, 1911, (from Rothman).

13. Zappert, J., von Wiesner, R. R., and Leiner, K.; Studien uber die Heine-Medinsche Krankheit, Leipzig, Franz Deuticke, 1911, (from Rothman).

14. Holt, E., and Howland, J.; Diseases of Infancy and Childhood, Ed. 8, New York, D. Appleton and

Company, 1926, p. 644, (from Rothman). 15. Neal, J. B., and Abramson, H. L., and Associates; A Study of Poliomyelitis, Dept. of Health, City of New York, reprint No. 70, 1918, (from Rothman); and Arch. Int. Med. 20:341, (1917)

16. Williams, E. C.: Lancet 2:23, (1899) (from

Rothman).

17. Marie, Pierre; quoted by Wickman, (from

Rothman).

18. Weber, Parkes: Lancet 2:591, (1899), (from Rothman).

19. Lovett, R. W.: Orthopedic Surgery, New York, William Wood and Company, 1923, (from Rothman). 20. Rothman, Philip E.: Amer. Jour. Dis. of Ch.,

42:124, (1931). 21. Bramwell, Edwin.: Nelson Loose Leaf Medi-

cine, Vol. 6, p. 311.

22. Griffith and Mitchell: Diseases of Infants

and Children. Ed. 8, Vol. 1, p. 611. 23. Heiman, H.: Am. Jour. Dis. of Ch., 18:83,

(1919).24. Comby, J.: Bull. et. mem. Sec. med. d. hop.,

de Paris, 44:161, (1920), 25. Moore, C. U.: Northwest Medicine, 20:176,

26. Neal, Josephine B.: Jour. Amer. Med. Assn., 77:121, (1921).

27. Hofstadt, F.: Zeitschr. f. Kinderheilk., 29:190, (1921).

28. Duzar, J. and Balo, J.: Jahrb. f. Kinderheilk., 99:209, (1922).

#### CASE OF AORTIC ANEURYSM E. W. RHEINHEIMER, M. D.

El Paso, Texas

(Read Before El Paso County Medical Society, El Paso, Texas, Feb. 8, 1932.)

B. D. M., age 32, pipe man, railroad, married. First seen August 8, 1931, when chief complaint was a "general poor feeling." On awaking felt fair but later in day felt weak and "sick at stomach," with vacant feeling in stomach. Occasionally for past week has felt hot at intervals lasting from 20 to 30 minutes each time and on August 6th was naus ated and vomited after his lunch. Has heart-

burn occasionally. Bowels soft and loose.
Past History: Has always been in good health but has had several attacks of tonsillitis. Specific urethritis once. Lues denied. No rheumatism. Wife in good health, two children alive and well. Wife

no miscarriages.

Examination: Tall, thin male, does not appear acutely ill. Tonsils, chronic inflammation, and enlarged. Marked pyorrhea front teeth and all teeth

in poor condition. Lungs, normal resonance entire light side with normal voice and breath sounds. Left side, impaired resonance left apex with harsh breath sounds and crepitant rales at apex. Remainder left lung normal. Heart marked enlargement to the right. Sounds fair quality with soft systolic murmur at lower end of sternum. Rate regular, 92. Blood pressure 110/80. Abdomen flat with no masses or areas of tenderness. Reflexes normal. X-ray chest: Right lung increased bronchial thickening with some calcified nodes on hilar area. Left lung increased bronchial thickening with small amount of scar tissue in first interspace. The heart shadow is vertical type and shows some dilatation of both ventricles, more marked on right. The right auricle appears pushed up by the right ventricle and shows marked dilatation. Conclusions: Lung markings with the calcified nodes in hilar area could be due to an early incipient type of pulmonary tuberculosis. Heart suggestive of mitral stenosis but flu-oroscopic study suggested. Patient advised to return for further study, but not seen after August 12th.

December 3, 1931, admitted to Hotel Dieu with the history of sitting quietly in his home this afternoon and about two o'clock became suddenly ill with an acute cutting pain over the heart. Was assisted to bed and fainted. Remembers that he had a chilly feeling and was covered with cold perspiration. The pain over the heart continued and was aggravated by taking a deep breath. Has not had any similar attacks in the past. Pain not referred to either arm or neck. In September, 1931, tonsils were removed at another hospital but no reference was made at that time to any other abnodmality.

Examination on admission. Patient in poor condition and acutely ill. Slight cyanosis of lips. Restless and complaining of pain over heart. Slight dyspnea. Throat slightly reddened. Tonsils absent. Tongue slightly coated. Teeth in poor condition with marked pyorrhea. Marked foul breath. Lungs: Slightly impaired resonance left apex with increased voice and harsh expiratory breath sounds. Few crepitant rales at left apex. Normal resonance remainder left lung and entire right. Small moist rales both bases. Heart: Apex beat not visible or palpable. In the fourth right interspace two and one-half inches to the right of the right border of the sternum there is a visible diffuse pulsation. Left border of heart two inches to the left of the left sternal margin on percussion. Right border three and one-half inches to the right of the right border of the sternum. Width of aorta at level of second interspace two and one-half inches. Heart sounds heard best on the right side and muscular tones of poor quality. Harsh systolic murmur heard on right side with greatest intensity in fourth right inter-space and not transmitted. Soft systolic murmur heard just below ensiform. Over the right side from the 3rd to 5th ribs on a line about two and one-half inches to the right of the sternum is a rough friction rub synchronous with the heart action. Does not disappear on holding breath. Heart rate 48, regular. Blood pressure 114/76 both arms. Abdomen. Not distended and no areas of dullness or tenderness. Liver lower edge palpable two fingers below costal margin. Spleen not palpable. Reflexes present and normal. Slight edema both ankles. Urine. 1016, albumin a trace, sugar absent, occasional granular cast. Wassermann negative. Blood. R. B. C. 4,500,000. W. B. C. 8,000. Polys 72.

Treatment. Rest in bed, ice bag over cardiac area

and codeine for pain.

Cardiac pain gradually disappeared simultaneously with the friction rub. On 5th day heart suddenly started fibrillating and patient complained of palpitation and slight increase in dyspnea. On digitalis

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therapy and sedatives heart action became more quiet and dyspnea less marked but fibrillation continued. Electrocardiogram on January 8, 1932, showed auricular rate of 400, ventricular rate 73. T waves upright. Except for auricular fibrillation the cardiogram showed no organic heart disease. Fluoroscopic examination of heart and esophagus with barium meal showed, according to roentgenologist's report, marked dilatation of the right auricle with considerable pulsation. No apparent pressure on the esophagus as the barium meal was swallowed. No increase in density or areas of dilatation could be seen in either ascending or descending aorta. No tracheal tug demonstrable at any time. Patient discharged from hospital on January 9, 1932 with condition considerably improved. Able to walk several blocks without dyspnea but fibrillation still persisted. On discharge the heart findings were the same.

On January 15, 1932 while at his home had a sudden severe pain over the heart, collapsed and died while on the way to the hospital.

Working diagnosis while in hospital: aortic aneurysm, an urysm of right heart, dilated right auri-

cle, cause not determined.

Dr. W. Waite, in reporting autopsy findings, remarked that the case was an extremely interesting one and that it would have been impossible to have made the final diagnosis during life. He referred to other cases examined by members of the Pathological Club, but admitted this was different from any other that they had come across and was in a class of its own. From the x-ray, the diagnosis would have to be either a mediastinal tumor or tumor originating in the lung, or an aneurysm. However, tumor of the lung of this size ought not to cause distress, or at least not as much disturbance as was evident in this case, nor should a tumor of the mediastinum.

On opening the chest, the pericardium was distended and bluish, and indicated either a ruptured heart or aorta. When the heart and aorta were removed, a large saccular aneurysm was found of the ascending aorta. Part of the wall of the aneurysm was very thin and contained a small rupture which accounted for the hemorrhage. This rupture filled the pericardium completely with blood. On opening the aorta, a large rupture, almost completely encircling the aorta, was found of the inner and middle coats. In places, this layer formed by the middle coat was partly dissected loose from the outer coat and separating the middle coat so that it projected free into the aneurysmal cavity. This fracture of the middle coat was as sharp and distinct as if it had been cut with a knife. Except for a slight atherosis, the rest of the aorta appeared healthy. As when examined, the fractured area appeared to be a progressive affair. It seemed that it must have ruptured first for a short distance. In the posterior region, anterior to the esophagus, there was an area filled with blood clot and this probably corresponded to his August upset. The large rent was probably produced in December when had his severe attack. Of course, his last upset was due to hemorrhage into the pericardium. x-ray evidence indicates he had his trouble even before his August upset but the cause for the aneurysm is not apparent. There are no scars suggesting syphilis nor does the microscopic examination show the usual picture seen in syphilitic aortitis. Syphilis of the aorta, when acute or active, produces intense round cell infiltration in the outer coat around the little blood vessels. When the process is very active, it occludes the blood vessels by pressure and then there is an infarct or dead area resulting, corresponding to the area supplied by the occluded vessels. As this area dies, it stretches. While the above changes are going on, the outer coat is getting thicker. When the inner walls of the aorta give way, the outer coat holds in the blood but, being made up of loose tissue, it stretches. Sections showed slight thickening of the aortic wall but not at all like that seen in syphilis. What made the aneurysm we do not know unless a natural congenital weakness of the aorta. The sections showed a little round cell infiltration but that was to be expected. While aneurysm of the aorta is pretty nearly 100 per cent syphilitic, I believe this is one of the few cases where it was not due to syphilis.

## CONGENITAL OBSTRUCTION OF BILE DUCT

(Case Report)

FLOYD B. SHARP, M. D. Phoenix, Arizona

(Presented before the Staff Meeting of St. Joseph's Hospital, Phoenix, Ariz.)

Case 20604: Male infant dying apparently of congenital obstruction of the common bile duct, at the age of six days. It is of interest to note certain facts regarding its parentage and the labor on the part of the mother giving birth to this child, as should be done in all cases of death in early infancy.

The father was a disabled ex-service man with cardiorenal disease and until recently a patient at Whipple Barracks. The mother was first seen in my office August 28, 1930, complaining of marked nausea and vomiting which she had had with her four previous pregnancies, one of which terminated at three months, she thinks as a result of pernicious vomiting. The other pregnancies resulted, the first time in an eight pound baby at term which showed signs of cerebral damage and has had some paralysis ever since. The mother has been unwell since, was badly torn and has felt as if the pelvic organs were falling out. The second baby weighed eight and a half pounds and delivered spontaneously after a long, hard labor of several days. The other baby weighed six pounds, likewise born after a long, hard labor. The husband said that the doctor stated that he feared at the time of each delivery that he would be unable to get a live baby and that the mother was in a precarious condition as a result of the dystocia. At the time of her first visit to my office she gave a history of the last menstruation being the latter part of June, 1930. Vomiting had begun one month before and she had had some treatment, not effective, in Long Beach, Cal. Her weight was 110 pounds, about fifteen pounds under the usual weight. Briefly, examination showed a poorly nourished woman of about 27 years, skin dry and harsh, lips dry and cracked, an anxious facial expression, and vomiting continously in the office. Temperature 99.4.

The tonsils were present but not inflamed. Inspection of the ears showed the tympanic membrane retracted on both sides. There was marked tenderness over McBurney's point. External measurements of the pelvis did not vary far from normal. Bimanual examination showed a markedly contracted mid-pelvic plane, and a badly scarred, relaxed pelvic floor. The uterus was low in the pelvis and came easily down to the introitus and was enlarged to the size of a three months' pregnancy. The cervix was enlarged and firm, eroded and showing many old stellate tears. She was sent in to the hospital for treatment of her hyperemesis.

She was sent home free from vomiting and on full diet five days later.

The mother did not report for further prenatal care, in spite of a written request to do so, until chortly before term. At that time she was without funds and was referred to our clinic at the Social Service Center. She came into the hospital February 26th in labor with contractions about three to five minutes apart, duration 30 to 60 seconds. The baby was small but upon reviewing her history it was felt that she was at term and that the baby had been retarded in its growth by her toxemia or some developmental interference. The next morning there was little evidence of progress on rectal examination. Castor oil and quinine, in divided doses, were given to stimulate pains which had become weak and ineffectual, pituitrin was added later, in three doses of one, two and three minims respectively. Regular contractions resulted and since the cervix seemed hard and fibrous, morphine (grains 1/6), and scopolomine, grains 1/200), were given hypodermically early in the afternoon. There was no further progress.

That evening vaginal examination showed no bag of waters and a rather marked caput appearing on the fetal head through the cervix which was dilated about four centimeters. A Voorhies bag was therefore inserted by Dr. Flohr and about six hours later the patient easily delivered a live baby boy, weighing 5 lbs. 14 ozs.

Nothing unusual was noted in the baby until the third day when he appeared jaundiced. The next day he did not nurse well, cried frequently as if in pain and became rapidly more jaundiced. Special attention was paid to its feeding, to the bowels and to the routine items in the baby's care. Altogether 45 cc. of mother's blood was given intramuscularly. Interperitoneal saline was given at intervals, also a half unit of insulin after the baby was seen in consultation with Dr. Sherrill. The jaundice rapidly became deeper. The baby became moribund and died on the morning of the sixth day. Consent for an autopsy was secured from the mother and was done in Glendale by Dr. Flohr, Dr. Franklin and I being present. The abdomen only was opened at the request of the mother. Following is the report of Doctor Flohr.

The body is that of a six day old baby boy, weighing 5 lbs. 6½ ounces, extremely jaundiced and markedly dehydrated. Examination was made of the abdomen only with special reference to the liver and gall duc's. The left lobe of the liver was enlarged to one and one fourth times normal size, was very dark, congested.

The gall bladder was tense, about an inch and a half long and three eighths of an inch in diameter. this is one and a half times normal size. The cystic duct and common ducts were dissected loose. These were found to be medium size but very fibrotic and hard. It was impossible to express bile from the gall bladder into the intestine. The common duct was cut just below the junction with the cystic duct; at this point bile could be expressed from the ball bladder. On opening the duodenum the ampulla of Vater was twice normal size, deeply congested, very firm. We were unable to express bile through the ampulla of Vater, even before the duct had been severed. On section we discovered a small calcareous nodule obstructing the common duct.

The baby had an undescended right testicle and on the left side the testicle was partially descended giving the impression of the possibility of a hernia. Anatomical Diagnosis: Congenital obstruction, common duct at the ampulla of Vater, dehydration.

Since there was no evidence of other pathology in the child before death, special attention being paid to the possibility of cerebral injury, it must be concluded that the cause of death was congenital obstruction of the common duct at the ampulla of Vater by a small calcareous nodule. At the time of autopsy I further noted and mentioned that patency of the distal 1.5 cm. of the common duct was impossible to demonstrate, being apparently replaced by a fibrous cord. Surgery was suggested as soon as the diagnosis was made, but deemed inadvisable because of the baby's condition and the extremely small hope of accomplishing any benefit. Autopsy would seem to support this contention.

#### PYLORIC ULCER AND PAPILLARY ADENOCARCINOMA OF GALLBLADDER

(Case Report)

JOHN H. WHITE, M. D. Phoenix, Arizona

(Presented before the Monthly Staff Meeting of St. Joseph's Hospital, Phoenix, Ariz.)

Case 21596: Entered hospital conscious and rational, Dec. 6, 1930, with the following history: Patient vomits entire meal five to eight hours after ingestion of it. Gas forms in stomach three to four hours after meals. Food and soda relieves gas. On December 1, 1930, awakened at three a. m. with gastric distress. This is very unusual. Bowels have been inclined to be constipated for twenty five years. Stomach trouble at intervals for same period of time. Several attacks in 1913. Appendix removed at that time without relief. Has sour stomach and belches with very little regurgitation of food. Dr. Gudgel, who has been treating him for several years, said this attack began in September, 1930, and had an interval of almost a year during which he suffered very little. Vomits quite frequently now. Vomitus has the appearance of coffee grounds and suggestive of malignancy.

Family history: mother well, father died at 33 of typhoid fever. One brother well, four dead, all of tuberculosis. No sisters. Wife well, no children. Past History: Usual childhood diseases; flu in 1927; appendectomy in 1913.

Physical Exam.: Fairly well developed, fairly well nourished white male about 58 years of age. Definite arcus senilis. Pupils react to light and accommodation. Nose clear, throat normal; neck no thyroid enlargement; chest: normal in contour and expansion; breath and voice sounds clear and distinct throughout both lungs. Cardiovascular: heart normal in size and position; rate 89, no murmurs. Abdomen: some tenderness in epigastrium, no palpable masses; no rigidity. Examination otherwise negative.

Laboratory: Report of gastro-intestinal on January 19, 1927: In the examination of the stomach of this patient, there is delay in filling of the cap with the patient standing and definite spasm of the pylorus, with delay in filling the duodenum. When duodenum was outlined, the contour was practically normal with some evidence of obstruction in the second portion.

There was a definite six hour residue of about fifty per cent of the barium and some residue still present at twenty four hours. The dye administered did not outline the gallbladder after twenty four

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and thirty six hours. We think the failure to out- filtration into the deeper layers of the wall. Diagline the gallbladder with some lesion in the right upper quadrant producing duodenal obstruction without evidence of duodenal ulcer is fairly definite indirect evidence of pathology involving the gall-bladder. December 3, 1930. Blood: Wassermann reactions were negative; icteric index 6. Red count 4,260,000; white count 6.400. with polynuclears 63 and monos 37: hemoglobin 95; Ewald test meal free HCL 62; total acidity 86: trace of blood. Microscopical examination negative.

December 4. 1930, x-ray report: In examining this patient's gallbladder with dve, we showed no visible outline at twelve hours, there being a faint shadow present at eighteen hours, this shadow being faintly visible at the thirty six hour period also. barium meal, we show hypermotility and spasm of the pylorus with contracted and irregular duodenal shadow. This shadow presents an incisura on the outer margin of the cap. We find that there is still a residue of barium meal at the end of twenty four hours representing definite delay in emptying. The colon was outlined in twenty four hours without visible abnormalities. These findings are definite for ulcer of the pylorus probably extending from both sides of the ring. The reaction of the gallbladder to dve is that of functional disability.

Urine specimens on December 7th and 15th, both showed trace of albumen and an occasional pus cell and two to four blood cells on last specimen. On December 11th, stool specimen positive for occult

A working diagnosis of duodenal ulcer and gallbladder disease with possible malignancy in this area. having been made, operation was deemed advisable.

Operation Dec. 12, 1930 by Dr. Palmer: Spinocain was introduced into second lumbar interspace, Perfect anesthesia and relaxation ensued in few minutes. Five inch right paramedian incision commencing in the enigastric space and extending downward, the abdomen was opened. Some free fluid in peritoneal cavity. A scar was present on anterior surface of the plyorus extending across the duodenum, the greatest amount of scarring being on the duodenal side. No adhesions. The opening through the pylorus permittted the index finger.

The gallbladder was very large, thickened, ad-There was a soft hered to omentum and duodenum. blackish gangrenous area at the fundus where a perforation was threatening. A ball and valve stone was obstructing the cystic duct. The edge of the liver was extremely thin and marked cirrhotic changes present in the liver. The common duct was palpated, apparently normal. Enlargement of the glands along the common duct. Head of pancreas thickened and indurated. Cholecystectomy was done commencing at the cystic duct and extending upward. A posterior gastroenterostomy was also performed. Postoperative diagnosis: a pyloric ulcer involving principally the duodenal side. Chronic cholecystitis with suspicion of malignancy. Cholelithiasis and chronic pancreatitis.

Smear and culture from gallbladder taken. No bacteria on smears; broth culture showed staphylococci and colon-like bacilli.

Pathological report of gallbladder: Gallbladder greatly enlarged, wall thickened with polypoid growths on the lining. Soft and necrotic masses of material free in the contents. Large numbers of gall stones of varying sizes. Sections from different areas show a new growth in the form of papillary formations protruding into the lumen covered by multiple layers of epithelia. There are areas of innosis; papillary adenocarcimona.

PROGRESS NOTES

December 13, 1930, patient's condition satisfactory but pulse is weak and abdomen quite distended; very little drainage on dressings; stomach lavage, 800 cc. dark colored fluid with some gas; patient feels better. Following this, 1000 cc. normal saline and glucose given intravenously; temperature range . between 99 and 99.4 and pulse between 100 and 110.

December 14th, wound dressed, large amount of greenish yellow bile drainage; condition improved; temperature range 99 to 99.4; pulse between 98 and December 15th, wound dressed, dressing saturated with dark brown and green bile, patient developed a right sided parotitis which looks very much like mumps. Condition of patient improved; temperature range 98.4 to 100.2, pulse 90. December 16th, clips removed; large amount bile drainage; drain shortened; patient belching; vomited 150 cc. dark fluid two times that day; duodenal tube inserted and gave some relief, temperature 99 to 99.4; pulse 90 to 96; taking to between three to four thousand cc. of fluid per day by mouth. December 18, much improved, taking nourishment without discomfort; drain removed, free bile drainage; wound healing; general condition satisfactory; patient restless, not sleeping well; temperature 98.8 to 99.4; pulse 76 to 80. December 20, wound inspected, clean, dry and healing; taking more food, no discomfort.

December 22, wound dressed, stitches causing considerable irritation and cutting into wound; 11th postoperative day; stitches removed; condition good. December 24, patient's temperature went up to 103; vomited 300 cc. bile stained liquid; felt better after vomiting; condition not as good as two or three days previous; no drainage from wound. December 25th, patient still vomiting bile; temperature between 100.2 to 102; pulse 90 to 100. December 26th, patient's condition improved; temperature and pulse lower, dressings are now saturated with thick yellowish green bile; patient has slight cough; wound seems weakly healed. December 27th, temperature 99.4 to 100.8; pulse 80 to 98; much drainage of bile from wound; condition of patient improved. December 28th, temperature 99.2 to 100; pulse 78 to 90; moderate amount of bile drainage from wound; patient very much improved. December 30th, less drainage; general condition improved. January 1, 1931; regurgitation of bile into stomach with resulting nausea and vomiting. January 8, appetite improved, stomach condition better, regurgitation of bile ceased; general condition good. January 11, wound closed. January 14th. wound firmly healed; general condition very satisfactory, taking general diet with no discomfort or gas. Treatment of this case before operation was that of a general ulcer treatment without response. Postoperative treatment; morphine grains one sixth hypo., amytal by mouth given for pain and restlessness. Stomach lavage for gastric dilatation, nausea and vomiting. Soda enemas for abdominal distention. Ice bag to swollen parotid gland. Gruels begun on 5th day postoperative. All food was discontinued on 16th day because of change in patient's condition. They were resumed again on the 13th day. treatment carried out after operation. Patient dismissed from hospital on January 14th, 33 days after operation.

DISCUSSION

DR. E. PAYNE PALMER: This patient presented two interesting conditions; stomach ulcer of long duration and gall bladder disease of long duration, both serious conditions if allowed to continue. We do not know how many ulcers become cancerous

but a fair percentage do, and a chronically inflamed gall bladder will become cancerous. This question of the proper treatment of stomach ulcer has been threshed over and they are still threshing it. After prolonged medical treatment, if they do not respond, surgery should be resorted to. The European surgeons are excising the ulcer bearing area; gastroenterostomy is perhaps as popular as ever; pylorectomy is being done with satisfactory results. In the case of a diseased gall bladder, the longer the condition is allowed to exist the more trouble we will have. This case showed where surgery is necessary early. The fact that he is well now does not mean that he will stay well, as he has had a cancer and a badly diseased liver and pancreas. It illustrates that we should not wait for emergency before operating.

## GUNSHOT WOUND OF ABDOMEN Case Report

JAMES VANCE, M. D., F. A. C. S. El Paso, Texas

(Read Before El Paso County Medical Society, El Paso, Texas, March 14, 1932.)

M. S., white, age 54, cattle ranchman, was shot through the abdomen on the evening of Sept. 9, 1931, while in a fight over some ranch dispute. He was a heavy set, powerfully built, muscular man of about five feet ten inches in height and weighing

around two hundred pounds.

He was shot about 6 p. m. by a .45 caliber revolver. The large, heavy bullet entered the right side in front of the kidney and ranged transversely through the abdominal cavity and emerged three inches above the crest of the left ilium. The wound of exit was frightful in extent, nearly 5 cm. in diameter and closely resembled the exit of the explosive effect of a high power rifle bullet. In spite of his frightful wound this man, according to his own story, struggled with his opponent over a distance of forty yards, took his opponent's pistol away from him and, in his own language, "almost beat him to death with the empty pistol, and would have done so had he not become blind and dizzy with weakness." This story was told after the man's recovery from his injury, and knowing the extent of his wound I thought he had simply dreamed he had fought as described above, but eye witnesses later testified to the facts closely as above described. This fight took place on a cattle ranch about one hundred miles from El Paso and due to this distance and police examinations, it was four hours later before he was brought to Hotel Dieu for treatment.

On examination the man showed considerable shock but very little for the severe wound he had, and the delay and long journey in getting him to the hospital. His pulse was only 90 and of fair volume. Respiration was only 24 and temperature subnormal.

He was taken to the operating room and given spinal anesthesia, and the abdomen was opened by a long midline incision. The abdominal cavity was then thoroughly explored. It was found that the bullet had entered the abdomen just over the lower pole of the right kidney, injuring that organ so that the urine was bloody for several days. The bullet then passed behind the ascending colon over the root of the mesentery and in front of the spinal column. It completely so vered the jejunum three inches from its origin, and again opened the gut englood higher up. This opening was 3 by 3 cm. in extent. Then the bullet opened the upper end of the sigmoid, cutting across the anterior wall of the gut. making a wound 1.5 by 4 cm. in extent.

The severed jejunum was closed by an 'end to end

anastomosis after cutting away the lacerated ends of the gut. The opening in the jejunum above was closed transversely to the gut and the opening in the sigmoid was closed in the same way. Two rows of catgut were used in closing the gut walls, in each case, and then the peritoneum was closed with fine silk.

Every inch of the entire gut was then gone over thoroughly and all the other abdominal viscera were carefully inspected, but no further injuries were

found.

All blood and fecal matter was then carefully sponged from the abdominal cavity. A drain was then inserted out the large wound of exit through the abdominal wall. The abdomen was then closed.

This case is especially interesting because of the fact that though there was a terrific struggle after the wound was received, there was very little blood and fecal matter within the abdomen. The amount of blood was not over 4 to 6 ounces, and the amount of escaped fecal matter was very much less.

It is a well known fact that fierce wild animals in a terrific rage are far more difficult to kill than those surprised and killed without knowing the rresence of their enemies. This man, at the time he was shot, was raving mad. This anger apparently quickly staunched the hemorrhage due to the cutting of the jejunum although it is richly supplied with blood, and also prevented to a large extent the escape of fecal matter into the abdomen. Had this man been shot as he was, and without the presence of anger, I am sure he would have collapsed at once and died within thirty minutes. Postmortem would have showed the abdomen full of blood.

The second point of interest is the fact of an easy operation and the easiest recovery I have ever seen after so severe a wound, due largely I think to the spinal anesthesia employed. In spite of the supposed contraindications to spinal anesthesia of shock and almost no blood pressure, this man did well on the operating table and marvelously well afterwards.

This man went home well within three weeks and has remained well since.

THE MEDICAL CLINICS OF NORTH AMERICA; (Issued serially, one number every other month); Volume 14, No. 3 (Mayo Clinic Number, November 1930); octavo of 261 pages with 50 illustrations; per clinic year, July 1930 to May 1931; paper, \$12.00; cloth, \$16.00 net; Philadelphia and London; W. B. Saunders Company; 1930.

Among the more interesting of the subjects found in this volume are: Pellagra Following Operation for Gastric Ulcer, by George B. Eusterman; Foreign Bodies in the Bronchi Overlooked at Bronchoscopic Examination, by Porter P. Vinson; Mesenteric Lymphadenitis in Adults, by Walter C. Alvarez; Electrocardicgraphic Localization of Myecardial Infarcts, by Arlie R. Barnes; Obesity, by Clifford J. Maytum; and Purpura of Infectious Origin, by Louis G. Stuhler and Allen C. Nickel. Each aritcle is worthy of review but space forbids.

O. H. B.

#### CASE OF OBSTRUCTIVE JAUNDICE

GUY C. FRENCH, M. D.

Phoenix, Arizona (Presented before the monthly Staff Meeting of St. Joseph's Hospital, Phoenix).

Mrs. M. S., age 62, married. Three living children, none dead, This patient came into our office February 17, 1931, accompanied by husband. She complained of severe pains, colicky in character, in right upper quadrant of abdomen radiating to right side of thorax and up to right shoulder, accompanied by nausea and vomiting. She stated that her stool was clay colored. Present complaint of three or four days' duration, becoming progressively worse. She gave a history of stomach trouble, dyspepsia, distention after eating, sour stomach after eating fats and sour foods for the past fifteen years.

After a superficial examination we advised her to go to the hospital immediately for operation. This she and her husband refused to do. They desired drugs for her condition. She left the office and we heard from her again February 26, 1931, when the husband called us. We saw her at home and sent

her to the hospital.

At this time she was prostrate, having been bedfast for nine days. Was extremely jaundiced, four days' duration. Nausea and vomiting was extreme. She desired surgery for her condition. We informed her relatives that we were uncertain relative to results to be atlained, but that we would study her further and decide upon procedure.

Further study revealed that she had had usual diseases of childhood. Menses began at fifteen years of age, always regular, small in quantity, no pains before, during, nor after period. Leukorrhea since children were born. Married twenty-eight years. One miscarriage between first and second child, at three months. Last menstrual period ten

years ago.

Physical examination revealed an obese, extremely jaun'iced female past middle age, lying in bed, evi ently suffering much pain and discomfort, expecially in epigastrium and over gall bladder area. Temperature 98.6. Pulse 64, rhythmic and strong. Blood pressure 128/78. Respiration 26. Weight 173 pounds. Best weight 180 pounds. Head no scars nor exosioses, no deformities; pupils react to light and accommodation, no disturbances of ocular movements, sclera deeply jaundiced; wears dentures, mucous membranes jaundiced. Neck thyroid not palpable, no cervical adenopathy, no abdominal pulsations of vessels, no trachael tug. Chest sthenic type; breasts large, pendulous; breath sounds normal; no abdominal areas of dullness; no rales heard. Cardio-vascular enlarged somewhat to left, sounds clear and distinct, rate regular and rhythmic, no murmurs heard; terminal vessels seem soft. domen; large, obese and pendulous, extreme ten-derness over right upper quadrant, no tumors nor viscera palpated, no other points of tenderness. Genito-urinary; external genitalia normal, cervix small and hard, tender in both adnexa, fundus not felt as patient will not cooperate, mucosa is pale and glistening in appearance. Skin; deeply jaundiced, no eruptions. Bones and joints negative. Glandular negative. Neuro-muscular; Reflexes all retarded.

Laboratory findings upon admission: Urine: amber, cloudy, neutral, 1026, trace of albumin, sugar negative, bile positive, occasional hyaline cast, oc-

casional pus cell, no blood.

Blood: Hemoglobin 80 per cent; white blood cells 10.800; polynuclears 70. large lymphocytes 22, transitionals 3, eosinophiles 4, basophiles 1. Coagulation time nine minutes. Icteric index 90.

February 27: General condition seems slightly

improved. Patient deeply jaundiced. Temperature 98.6. Pulse 72. Respiration 24. Urinalysis unchanged except that urine is darker in color and contains occasional red blood cells, and a few epithelial cells. She is given large amounts of fluids by mouth. Magnesium sulfate by mouth and 1900 c.c. of 50 per cent glucose intravenously during the twenty-four hours. Icteric index 98. Caring the twenty-four hours. Icteric index 98. condioxide capacity of blood 53.6. Van den Bergh direct and indirect positive. Relatives told that operation was useless; hepatic degeneration well under way.

February 28: Patient states that she feels better, still deeply jaundiced, icteric index 80.

Condition remained practically unchanged until March 4, when icteric index rose to 120. In meantime relatives insisted that we operate to relieve condition, but had no funds for a liver function test. We, however, hesitated fearing that liver had been damaged to such great extent that the patient would not survive. It was quite obvious that the patient had complete obstruction of common duct, since the stool was white and jaundice so deep. The pain was only slight at this time so we suspected ob-struction to be due to inflammatory condition rather than stone. She was given calcium lactate, by mou h until coagulation time was 7½ minutes. Relatives insisted, and finally a decompression and drainage was consented to.

March 6; A cholecystotomy was done under local anesthesia. Patient returned from operating room in fair condition, temperature 98.2, pulse 80, respira-

tion 20, draining bile freely from tube.

Patient's general condition seemed unchanged except that temperature ranged from 98 to 102.

Mach 11; Tube came out. Bile drained freely from wound. Stool contains bile. March 12; Patient complained of pain in right

side of chest. Examination revealed evidence of

pneumonia. Condition was treated as such.

March 13; Temperature 101. Pain in chest subsided. Wound not draining bile. Complains of pains in epigastrium. No rigidity, slight tenderness over epigastrium.

March 14; Condition unimproved. Evidence of blood in stool, bright red. Patient has hemorrhoids.

Stool contains bile.

March 15; Temperature 100-102. Pulse 80-100; regular and of good volume. No nausea nor vomiting. Deep jaundice unchanged. Complains of pain down right leg. No evidence of phlebitis.

March 16; Condition seems grave. Patient very weak. Temperature 100.4. Pulse 106. No drainage of bile from wound; emesis of bile stained fluid.

Patient expired at 4:20 a. m.

Autopsy, (Dr. Guttman): The body is that of a well developed, fairly obese woman, whose body length is estimated at 165 cm., and whose weight is judged to be 175 lbs. The body has been recently embalmed. There is a diffuse, well marked jaundice over the entire body. There is no edema and the degree of cyanosis cannot be determined. The amount of hypostasis cannot be determined. There is a trochar puncture wound in the abdomen below the level of the umbilicus. The abdomen is moderately distended. There is a recent closed operative wound extending transversely and slightly downwards to the right of the upper midabdomen. The incision measures about 15 cm. in length. The subcutaneous fat measures about 4 cm. in diameter, is of a bright yellow color. There is a slight amount of old hemorrhage and necrosis about the wound of the abdominal wall.

On opening the peritoneal cavity the intestines are found to be moderately distended. A moderate amount of dark brownish-yellow fluid is encountered, and also a considerable amount of semi-fluid fecal material, the latter undoubtedly due to the numerous trochar puncture wounds of the intestines. The bile stained fluid is limited mostly to the upper left quadrant. The quantity cannot be determined because of the admixture with the large quantity of fecal contents. There is a large amount of fat in the omentum. The upper portion of the omentum is firmly adherent to the under-surface of the abdominal wound, and is separated with difficulty. The proximal one third of the transverse colon and the distal portion of the gallbladder are firmly united to the omental fat and the undersurface of the abdominal incision. Examination of the lungs through an opening in the diaphragm showed crepitation present throughout, slightly reduced in the lateral posterior borders of the lower lobes of each lung. Sections of tissue were taken from this portion for microscopic examination.

The liver is moderately reduced in size; the surface is pale greyish brown in color. The capsules are rather smooth. It sections with ease, organ is very doughy in consistence. Cut sections show a fine greyish mottling, corresponding to the distribution of the lobules. The bile passages are s'ightly dilated. There are no changes in the blood vessels. The gallbladder is markedly thickened, and its distal portion is firmly adherent to the undersurface of the abdominal incision and the structures above it. A small opening about one half cm. is still present at its distal portion, the former opening of the drain. It connects with a small sinus in the mass of adhesions above it, but apparently does not connect with the abdominal wound. The mucosa of the bladder is granular in appearance, and presents numerous hemorrhagic areas. The cystic duct is patent, and can be easily traced to its junction with the common duct. The gallbladder contains no stones. The common duct dissected down to the ampulla of Vater, where two stones were found. These are small faceted stones, about 4 mm. in their maximum diameter, and are fairly easily dislodged. The circumference of the common duct is 18 mm. at a level of 2 cm. from the ampulla of Vater; it maintains this diameter until about 1 cm. below the entrance of the cystic duct, at this level the diameter increases quite abruptly to 23 mm., and maintains this to its junction with the right and left hepatic ducts, which also appear dilated. The duct near the ampulla of Vater appears of normal diameter, and the papilla is open and somewhat dilated.

The pancreas is of a pale yellowish color, and its lobulations are of normal size and appearance. Occasional small, greyish-white, well circumscribed plaques are present about the pancreas and in the peritoneal cavity in the immediate vicinity of the rancreas; the largest of these measure about 5 mm in diameter. There is no evidence of hyperemia about these areas. The pancreatic ducts are of normal calibre, and are not obstructed.

The spleen is moderately increased in size; is soft in consistence; the capsule is of normal thickness. The organ sections with ease; the pulp is a dark brown color, and a large amount of it scrapes away on the knife edge. It is extremely soft and friable

The s omach is moderately dilated, and contains a large amount of fluid. Its mucosa shows irregular areas of post mortem autolysis, with small intervening islands of normal mucosa, slightly elevated. There is no evidence of ulceration. The pylorus and duodenum show no evidence of disease. The small intes ines are moderately dilated; contain semifluid content, of a dark greyish-brown color. The large intestines are also slightly dilated, and contain a large amount of semi-fluid content.

The supra-renals are of normal size. There is a marked degree of central necrosis; the cortex is of a yellowish color, and of apparently normal thick-

ness. Both kidneys are of normal size. The capsules strip readily, and reveal a smooth, pale, yellowish-brown surface. On section the cortex and medulla are of normal proportions and thickness. The cortex is extremely pale, the medulla slightly darker. The markings are indistinct. The pelvis and ureters show no change. The bladder contains a moderate amount of urine, and no evidence of structural change.

The uterus is of normal size and appearance. The ovaries show a moderate degree of atrophy and oc-

casional small follicular cysts.

Permission to examine the chest and head was not

granted.

Microscopic examination of liver tissue shows a moderate increase in connective tissue in the lobular spaces about the bile ducts, and a quite marked increase in the lymphatic infiltration. The central portions of the lobules, that is, about the central veins, show a fairly marked degree of degeneration of the liver cords. There is a marked collection of pigment between the surviving liver cells, in places the pigment replaces entirely the liver cords. There is a moderate dilatation of the small venules in this region. The von Kupffer cells in this region are hypertrophied and contain bile pigment granules. Marked increase of connective tissue in the outer walls of the gallbladder; diffuse and focal accumulations of polyblas.s. The mucosa is moderately hypertrophied, and shows here and there small hemorrhagic extravasations.

Section of lung tissue shows moderate amount of dilatation of capillaries in the alveoli walls, and congestion. A few blood cells are present in the alveolar spaces. No evidence of inflammatory reaction. The pancreas shows no evidence of disease. The small white plaques previously described consist of areas of necrosis, which do not contain any inflammatory reaction about them. Sections of kidney show convoluted tubules swollen and the cytoplasm shows marked degree of hyaline degeneration, and a slight degree of fragmentation of cells. The lumen contains occasional bile casts. The

glomeruli show no evidence of disease. Primary Cause of Death:

Cholelithiasis wi'h obstruction of common duct and early obstructive cirrhosis of liver.
Contributory Causes:

(1) Jaundice

(2) Acute hyperplastic splenitis

(3) Toxic nephrosis

(4) Extravasation of bile into peritoneal cavity. Other Lesion:

(1) Recent closed operative wound

(2) Post mortem fat necrosis

(3) Post mortem central necrosis of suprarenals and autolysis of mucosa of stomach.

## TECHNICAL EXHIBIT OF S. M. A. AT A. M. A. CONVENTION

Specimens of human milk fat will be shown by the S. M. A. Corporation at the A. M. A. Convention in New Orleans May 9 to 13. Physicians attending the convention will have an opportunity to see the close similarity of S. M. A. fat to breast milk fat in chemical and physical properties.

An interesting motion picture will also be shown at their exhibit entitled "Infantile Spasmophilia".

S. M. A., an infant food resembling breast milk and containing cod liver oil, is claimed by its producers to be an automatic protection against rickets and spasmophilia, and the Committee on Foods of the A. M. A. has accepted S. M. A. and all its claims.

A new product, known as SMACO Hypo-Allergic Milk. developed especially for infants and adults sensitive to milk protein will also be exhibited by the S. M. A. people. Their Research Division will show a number of rare proteins and rare acids.

## NOTES ON UNDULANT FEVER JANE H. RIDER, B. S., Tucson, Ariz.

(Read before the Staff Meeting of the Good Samaritan Hospital, at its meeting of Nov. 23, 1931).

The nomenclature or terminology to designate this fever has been somewhat indefinite. It has variously been known as Malta fever, Mediterranean fever, goat herder's fever, and undulant fever. Up to the last few years Malta fever has been the most generally used term. However, more recently it has been felt that the disease is so wide spread that the use of the word Malta was rather confusing, and undulant fever has been adopted as a more suitable term.

Dr. Carpenter, of the Diagnostic Laboratory of the Cornell University Veterinary College, uses undulant fever to describe a malady resulting from an infection by the Br. abortus of bovine origin, reserving the term Malta fever for infection by Br. melitensis of human. caprine, or porcine origin. Personally, I think that this distinction is perplexing, and owing to the great difficulty in identifying the various members of the abortus-melitensis group, it has no useful purpose.

One of the first considerations in a discussion of undulant fever should be a study of the causative organisms. When we first became interested in this disease at the State I aboratory, the text books mentioned briefly microccus melitensis, responsible for Malta fever among the British troops stationed on the island of that name. The B. abortus of Bang was given in another section. It was the sixth edition of Stitt, I believe, that first mentioned the research of Miss Alice C. Evans and the cultural similarity of the two bacteria. Later work indicited that they are so closely allied that now they are classified as Brucel'a Melitensis: Variety melitensis A, variety melitensis B., and variety abortus. These are the most important members of the seven serological groups of Br. melitensis.

The majority of the strains of Br. melitensis, var. abortus, are derived from bovine and rorcine origin, a few from human cases are also included. Br. me'itensis, var. melitensis A., is made up of cu'tures from human, bovine, caprine, and equine strains. These varieties cannot be distinguished by a simple agglutination test, but the agglutinin-absorption reaction must be used. Br. mlitensis, var. melitensis B, is characterized morphologically by a predominance of the coccoid cells and may be distinguished from the varieties given above by the agglutination test, only when the titer of the serum used is ac-

curately known. This is the organism Bruce was working with when he discovered the cause of Malta fever and accounts for the name micrococcus melitensis.

Culture media using dyes to inhibit growth have been suggested to identify the varieties of Br. melitensis; none of these have been entirely satisfactory. The agglutinin absorption test is still the most reliable method of differentiation. It must continually be borne in mind that the source of the organism does not determine its variety. Investigators have found that while the abortus variety is chiefly responsible for the infection in cattle and hogs, melitensis A variety has also been found in these animals. Horses may also be a possible source of human infections.

The findings of the various workers have indicated that undulant fever is fairly prevalent in the United States, that the causative organism has been found in many parts of the country, and is identical with the organism that causes infectious abortion in cows and other animals. It is also found among workers who handle the carcasses of diseased animals, notably hogs. Its occurrence has been noted for a number of years among the folk engaged in the goat raising industry. The early work done on the Island of Malta by the Medical Department of the British Army indicated that the most probable causative agent was milk from infected goats. In Arizona we have found goat herders who have not used the milk who have become infected in caring for animals that have aborted, or in handling the carcasses of diseased animals. The infection in this instance probably enters through an abrasion of the skin of the hands. This year Dr. C. E. Yount of Prescott reported a case in a goat herder who had cared for an animal that had aborted. Males are more often infected than females. Farming and occupations associated with stock raising have furnished most of the cases.

The danger to man and to the dairy industry from the presence of this infection must not be underestimated by those concerned in public health and by the sanitary live stock officers. The time to control melitensis infection is before it becomes wide spread. The occurrence of contagious abortion in cattle probably does not interest doctors, and yet in Tucson we have had a definite case of undulant fever in a tuberculous patient, who had drunk raw milk from a herd of cows so infected. There was no question of the sanitary quality of the milk from this dairy, and to the best of our knowledge it was the only case that developed. This plainly illustrates that the incidence of abortion disease in cattle and the virulence of the causative agent are entremely variable in different herds.

In 1925, Carpenter reported:

"Two cases of undulant fever in Cornell University students at Ithaca, for which there could be found no possible source of infection except the raw milk that the patients had drunk. A careful investigation was made of abortion disease in the herd supplying this milk. The mixed milk was examined for 30 days and daily was found to be infected. A blood test showed that 10 of the 16 animals comprising the herd were positive, and the injection of the milk from these 10 cows into guinea pigs showed 9 to be discharging Br. abortus in the milk. An epidemiological study of undiagnosed fevers in this community revealed that several cases of a typhoid-like disease had occurred on this same milk route but no definite diagnoses had been made previous to our examinations. The milk from a second small herd in this vicinity, consisting of 3 cows, was carefully studied because it was supplied to a university instructor, who had been incapacitated with undulant fever for approximately 18 months. The mixed milk showed the presence of abortus infection for 7 of the 13 days upon which examinations were made. A history of the herd revealed that one of the animals had aborted two years in succession and her milk was heavily infected. The other two cows were normal.

Later, Dr. M. J. King observed a case of undulant fever at the Mutual Life Insurance sanatorium at Mt. McGregor, New York, and an investigation of the sanatorium here, as well as a routine examination of serum of all the patients and the staff at this institution, showed that 82 or 54.5 per cent of the animals were infected with Br. melitensis, and that 29.2 per cent of the infected animals were eliminating the organism in the milk. Eight of the patients showed definite symptoms of undulant fever, and many others had a history of symptoms suggestive of the milder form of this discase. All patients had been drinking large amounts of raw milk and cream from the herd. Following this investigation, all milk and cream used by the institution was pacteurized, with the result that no new cases have developed.

The work done in New York state and elsewhere has shown that about 20 per cent of the samples of raw milk, from a comparatively large territory, that have been examined were infected with Pr abortus. It cannot be supposed that all of these cultures have the same virulence: these studies indicate clearly that Pr. abortus is only slightly pathogenic for man, and it must be expected that only the most virulent strains in milk are dangerous to humans. It may be that a cumulative infection in the tonsils, lymph nodes, or other tissues is necessary and that at some time when the individual is fatigued, convalescing, or suffering from some other

disease, Br. abortus may invade the blood stream, causing the disease and setting up an undercurrent of infection. This is undoubtedly what happened in the case of undulant fever in the tuberculous convalescent at Tucson. All the research evidence that has been submitted suggests that raw milk and cream, and butter made from unpasteurized cream, may be a source of undulant fever.

The Phoenix outbreak in 1922 was from quite a different source. Only three of the 35 cases had not drunk goat's milk or not been with goats. Of the goats tested 18.3 per cent were found to be infected with Br. melitensis. Since the work done by Drs. Looney and Yount, of Prescott, in 1911, a number of cases of undulant fever have been recognized among goat herders and people consuming raw goat's milk. Cases have been reported in Yavapai county, the Willcox district of Cochise county, the San Pedro valley near Winkleman, Paradise in the Chiricahua mountains, Tucson and vicinity, Flagstaff, Morenci and the Salt River Valley. It is an extremely interesting fact that two Prescott physicians were among the earliest men in the United States to recognize this disease and to diagnose cases of Malta fever clinically and seriologically. Their work is outstanding, and has done much to call attention to the presence of this infection.

It was Keefer, of Baltimore, working in conjunction with Miss Evans who first discovered the possibility of the disease being disseminated by cattle infected with contagious abortion. A few cases of undulant fever have occurred among meat inspectors and butchers who have been in contact with swine. Dr. Hardy, U. S. P. H. S., working at the University of Iowa has discovered a numter of cases among the employees of packing In the San Pedro district, near Ray, there was a case in a goat herder who had killed and then dressed the carcasses of goats that had aborted some time before. The man had a cut on his hand and from this probable mode of infection developed a severe case of fever.

I hope this discussion will create an interest in undulant fever. All long continued obscure fevers should be suspected. At the beginning of the Phoenix outbreak the undulant cases were variously diagnosed as typhoid, paratyphoid, malaria, tuberculosis, acute articular rheumatism, and influenza. There are many symptoms which may or may not be present, but the clinical picture is definite enough to the physiciaan who has made a study of case histories of undulant fever.

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Four methods are available for the confirmation of a clinical diagnosis: 1. glutination test; 2. blood and urine cultures; 3. Animal inoculation; 4. Skin test. Burnet of Tunis reports that 15 to 20 per cent of human cases with a negative agglutination reaction will show a positive intradermal reaction.

In Arizona where this disease is known to exist, sera which are negative for the typhoid group should be examined for Br. melitensis. Miss Evans feels that the physician is more dependent upon the laboratory in diagnosing this fever than in any other disease. Miss Marion E. Stroud, State Bacteriologist, during the year 1928-29 examined 411 samples of blood from patients not suspected of having undulant and found that 5, or 1.2 per cent gave a positive agglutination. Two men and one woman, who had positive sera, had definite symptoms of undulant fever. One man, who was a dairy employee had had a rheumatic fever and a sort of "malaria" for some time. A later investigation showed 7 of the 15 cows had aborted in the herd with which this man worked. The second man, a patient in a local hospital, had well defined symptoms of undulant fever. The woman, a school teacher, had been drinking raw cow's milk. A third man, a student at the University, had only a rash on his hands and a rather obstinate constipation; other than that he appeared to be in good physical condition. Miss Stroud's invertigation indicated that there are a small number of unrecognized undulant fevers in Arizona and that it would be advisable to have agglutination tests made on the blood of all ratients with prolonged obscure fevers, with suspected arthritis, or any of the other symptoms more or less indicative of undulant fever.

In this connection, the conclusions of McAlpin and Mickle in 1929 should be quoted: "The finding of Br. abortus antibodies does not necessarily signify an active care of the disease. Undoubtedly mild infections without noticeable symptoms may cause the production of agglutinins. It is also possible that the agglutining may persist in the blood for long periods." It should be remembered also that all cases do not resemble a mild typhoid fever; the patient may be only partially incapacitated with an indefinite malaise or vague neuralgic pains.

#### STAFF OF HOTEL DIEU (El Paso) JANUARY MEETING

Dr. Gallagher presented a case of tuberculosis and pregnancy. (Hospital number B6249), patient, white, age 32, coming from a poor home. Entered hospital Dec. 5th with a bloody vaginal discharge. Patient was first seen Oct. 1st. Had bilateral tuberculosis, all lobes involved. She was a small emaciated woman, five months pregnant, but size gave very little evidence, examination revealed small fetus. An unusual feature was the heart tones which were a little less rapid than those of the mother. On admission to hospital patient had a pulse of 126. Hesitated about delivering her with the hope that she might be held off until the 7th month in an effort to save the baby, felt pretty sure the mother could not be saved. She went into labor afternoon of admission, was given gas and a manual dilatation of cervix was done. Forceps delivery of a very small baby, weight 2¼ pounds. Baby was wrapped in cotton and placed in incubator. Lived from 3:30 to 7 p. m. same day. Patient was better after delivery. Had been running temperature varying from 97 in the morning to 102 in the afternoon. She entered with a temperature of 97.6; next morning was 97 and 98.6 in the afternoon. Third day was 98 to 100.6, the fourth day 99.4 to 100.4. Patient expired the fourth day at 3.55 a.m. The question is, did the pregnancy have any influence on early death? It did no good but probably no ill effects from pregnancy. She had had a tuberculous laryngitis, infant was poorly nourished.

Dr. Vandevere presented a case of foreign body in the bronchus. (Hospital number B6379), patient, Mexican baby age 7 months, from out of town. Had had a bean in right bronchus 4 days when admitted to the Hospital. Temperature on admission was 102, pulse 140, respiration 160. Patient taken to operating room, given a few drops of ether, had a coughing spell and stopped breathing, bronchial cough, both bronchi were blocked. The right lung was entirely out. Bronchoscope was quickly passed and foreign body pushed down, patient began breathing ogain for a short interval, but stopped again. Due to swelling only parts of bean could be obtained. A vegetable foreign body becomes very dangerous after 48 hours, bronchopneumonia or tracheitis may develop. This patient died of cardiac

exhaustion.

Dr. E. B. Rogers presented a case of meningitis, (Hospital number B 6278), patient male, age 34, laborer at an ice station. Admitted to hospital Dec. 9th. Was seen a few days previously, very sick in b d at that time. Some consolidation of posterior lobe, left upper about 2 by 3 inches in size with bronchial breathing, impression was influenza- pneumonia. On admission to hospital pulse was 56, Kernig positive. It was thought by a friend present that the patient had had tuberculosis in the past and a recent gonorrheal infection. Spinal puncture was done. Fluid very bloody, cell count 150. Wassermann done on the second day was negative. Necarsphenamine was given following Wassermann. Spinal puncture was done again on the 11th, cell count 450, culture showed a few acid fast bacilli, fluid slightly cloudy, no meningo-cocci found. Patient became worse, pulse 160, temperature 106, with Cheyne-Stokes respiration on the 12th and died on the 14th, fifth day in hospial. The patient's brothers who came stated that patient had had tuberculosis 10 years ago and that he had had lues 8 years ago but received good treatment. A diagnosis of meningitis was made with three poss'biliti s, epidemic meningitis, tuberculous meningitis, cr cerebrospinal syphilis. The brothers would not permit an autopsy. Very little history could

be obtained on account of the patient's condition, which made the study of the case more difficult. Physical examination revealed some rigidity of neck and retraction of head. Chest, lower left lobe, posterior, over apex shows a consolidated area 2 by 3 inches with bronchial breathing and mixed moist rales. Heart was all right, abdomen negative for pathology. Mentally incompetent, irrational, talking at random, failed to reply to questions. Genitourinary; two months old gonorrheal urethritis. Neuro-muscular; pupils rigid, no response to light, accommodation not obtained. No knee reflexes, Kernig positive, Babinski and allied reactions positive. Decided against specific infection as all tests were negative.

Dr. Ramey presented a case of appendicitis, (Hospital number B 3973), male, age 63, who had entered hospital over a year ago with paralysis of arm and leg, high blood pressure. There was nothing eventful in his progress, was up walking about. Dec. 24th complained of pain in left side of abdomen. Diagnosis of influenza was made, later in the day complained of general abdominal pain. Urine showed albumin, blood count was 13,800. Intense pain and rigidity on right side, diagnosis of appendicitis was made. Lungs also examined, probably had a low type of bronchopneumonia. Was given spinal anesthetic, appendix found ruptured and patient died the following day. However he looked well and did well for a short time. Suddenly becoming cyanotic, condition bad and it was thought he had pneumonia. Autopsy by Dr. Waite revealed abdomen distended, colon markedly distended, particularly the pelvic loop, no definite signs of obstruction. Peritoneal surfaces in the right lower quadrant were somewhat dull and covered with exudate. Around the head of cecum there was a large dark gray wall of an ab-Appendix had been removed. Other abdominal organs apparently normal. On opening the chest there was an excess of fluid. Lungs showed considerable mottling with areas of increased density. On section they were quite badly congested and wet. The dark mottled areas were definitely pneumonic and the vessels supplying them contained definitely organized clots. Heart about normal size, section contained organized clots in both sides which is quite extensive. Valves are all in good condition. Diagnosis: Appendiceal abscess; peritonitis; massive cardiac thrombi; pulmonary infarct.

Dr. Morrison presented a case of prostatitis with terminal pneumonia. Hospital number B 6253, patient age 74, admitted to the hospital Dec. 6th. Reported that he had been ill 3 months previous to admission with what he thought was ptomaine poisoning, nausea and vomiting, recovered but still weak, had been up and down, but confined to his bed a week when first seen. Pain in back and frequency of urination. He was a large man and unable to care for himself and was sent to City-County. Temperature 102, pulse 110, blood pressure 175/96, mouth dry. Physical examination revealed some moisture in chest but no areas of consolidation, abdomen negative. Prostate large and tender, incontinence of urine. Due to the fact that incontinence of urine was taking care of urinary excretions, did not decompress bladder. fluids and patient was better, but lungs progressed, blood pressure came down and patient died Dec. 10th, 4 days after admission to Hotel Dieu. Laboratory report showed blood urea 45 mg. per 100 cc., creatinin 3.4 mg. per 100 cc.; urine slight trace of albumin, occasional pus and granular casts. Hemoglobin 90, red corpuscles 4,050,000, white 8,100, polys 87, large mononuclears 6, small mononuclears 12, (Continued on page 184)

PUBLIC HEALTH NOTES

J. ROSSLYN EARP, Dr. P. H.
Director New Mexico State Bureau of Public Health
PREVENTION OF MALNUTRITION

In inaugurating a radio health education series recently over station WBAL, Dr. W. H. Welch made the following statement:

A very important consideration in these unprecedented days of unemployment is that health and vitality are directly related to means of subsistence and standards of living, especially in the case of infants and children. Every effort should be made to guard against permanent and irremediable damage to health and strength as a legacy of the hard

times through which we are passing.

While it may be true that the financial depression has not hit the Southwest as trenchantly as it has hit the East, these words from the dean of American medicine are not without significance to Southwestern doctors. In New Mexico, at least, we know that there are plenty of children living dangerously near to the subsistence level. The following bibliography is offered here in the hope that it may be useful not only in public assemblies but also in offering private advice in poor households.

The American Public Health Association, 450

Seventh Avenue, New York City, offers

1. Emergency Nutrition, by Henry C. Sherman, 4 pages, 1c.

2. Food at Low Cost, by Lucy H. Gillet. 4 pages,

The Bureau of Home Economics, U. S. Department of Agriculture, Washington, D. C., offers

1. Emergency Food Relief and Child Health, 10

2. Adequate Diets for Families with Limited Incomes.

3. The Family's Food at Low Cost. 4 pages. And the Children's Bureau of the Department of Labor, Washington, D. C., has just issued a bulletin, "Emergency Food Relief and Child Health," which is recommended especially for teachers and others who can simplify its contents in repetition.

#### SMALLPOX VACCINATION

In spite of the New Mexico law which requires school teachers to exclude from school all children who have not been vaccinated (Chap. 110, Sec. 325, N. M. Compilation, 1929) we have had 229 cases of smallpox in the last two years: 171 in 1930 and 58 in 1931. Of these cases, in spite of the law, 165 are known never to have been vaccinated and only three are reported to have been vaccinated within seven years of taking the disease. Twelve had been vaccinated at intervals in excess of seven years before catching the disease and in forty-nine cases no history of previous vaccination was obtainable.

The duration of efficacy of smallpox vaccination is shown in some statistics recently made available in England. Of 3,518 smallpox patients under 15 years, 3,509, or 99.8 per cent were unvaccinated, four doubtful

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and only five (0.14 per cent) known to have been vaccinated. From ages 15 to 40, there were 3,231 cases of which 90 per cent were unvaccinated and 7 per cent known to have been vaccinated. There were 1,100 cases above the age of 40, and of these no less than 70 per cent had been vaccinated, but less than one per cent had been revaccinated. In England vaccination is usually given in the first year of life, if at all, and rarely repeated. These figures show that the expiration date of the average 'take' must be placed well within forty years.

Writing of 'takes' reminds me of an excellent review of smallpox vaccination which recently came to my attention. Dr. Smith recommends that the arm be washed with soap and water and cleansed with acetone. He describes the multiple pressure method of Kinyoun as modified by Leake in the following words:

A drop of the vaccine virus is placed on the skin of the arm at the insertion of the deltoid and the flat of a round needle is pressed at a point through the drop into the skin rapidly about twenty times. The needle is held tangential and parallel to the skin, and the vaccinating area is kept as small as possible, 1 to 1.5 square millimeters. Usually no blood is drawn. It must always be remembered that the needle is held parallel and not obliquely to the skin. The excess lymph is then wiped off, and the subject is told to return later for observation. Shields are positively prohibited.

The author goes on to describe immediate (immune) accelerated and primary reactions and their significance and also adds a useful paragraph on the distinction to be made between an 'immune' and a 'protein' reaction. Armed with modern technic, the modern physician should forget such phrases as "it did not take" or the "vaccination was unsuccessful" unless he uses them only on occasions when he has positive evidence that vaccination failed because no living virus was introduced into the skin.

#### MEDICOS EXTRANJEROS

Salubridad, the official publication of the Mexican Department of Public Health, continues to grow in volume and interest. current number contains no less than three articles on vaccination, which is compulsory in the republic, as is also revaccination. Of especial interest to American physicians is an editorial in this number entitled: Entraran Mas Medicos Extranjeros a Nuestro Paes. There are, it seems, more than enough Mexican medical graduates to take care of the Mexican sick. But the main objection to the foreign doctor is that he is a charlatan. The writer will not, he says, go so far as to sav that the terms 'medico extranjero' and 'charlatan' are always synonymous, but he finds the well-qualified foreigner to be the exception. If this charge is true, it seems to argue a lack of coordination between the medical licensing boards of sister republics. And perhaps it is a similar lack of coordination which accounts for certain radio programs that come to my ears from a section across the border. I would not go so far as to say that these programs and charlatan propaganda are always synonymous but in my experience there has been a certain relationship between the two.

1. Report of Chief Medical Officer of Ministry of

Health, 1930, (page 49). 2. Smith, Joseph, M. D. A Review of Smallpox Vaccination. The Rhode Island Medical Journal, September, 1931.

#### CASE DISCUSSION (Epigastric Pain and Indigestion For Four Weeks)

(Case Records of Massachusetts General Hospital, Case No. 17241, as reported in N. E. Jour. of Med., June 11, 1931, p. 1262).

FRANK J. MILLOY, M. D. ROBERT S. FLINN, M. D. R. J. STROUD, M. D.

Phoenix, Arizona Case History

This case is that of a fifty-two year old American laborer who came into the Emergercy Ward on the night of March 10. He was at that time very dull and unable to give a good history. His chief complaints were a vague dull pain through his epigastrium and stomach trouble for the previous four weeks.

His past history showed that he had been here in 1919 with acute rheumatic fever and in 1911 for appendectomy. He had an uneventful convalescence and was discharged feeling quite well. In the interval of twenty years he had been quite well, working regularly, and had had no attacks of abdominal pain and no discomfort of any kind until four weeks before admission, when there was a gradual onset of what he called "stomach trouble". This consisted of dull pain in the epigastrium and over the umbilicus radiating towards the sternum, not to the shoulders or down the arms. It was relieved by food, milk and soda. About three weeks before admission his urine became quite dark and his skin became jaundiced. This had grown progressively worse until entrance. At that time he was quite jaundiced and had anorexia and occasional nausea and voiniting. He had lost twenty pounds in weight.

He was first seen in the Emergency Ward by the East Medical service.

He was found to be fairly well developed and nourished and jaundiced. He had signs of recent weight loss. His teeth were carious. The glands were normal. The heart and lungs were negative. The abdomen was quite distended with gas and was difficult to palpate. No fluid wave was obtained, but on percussion it seemed that the liver dullness was quite diminished and there was dullness in the flanks. Sounds of peristaisis were heard. could percuss the liver dullness in y on a small band between the sixth and eighth ribs on the right. Rectal examination showed some internal hemorrhoidal tabs.

When he arrived in the ward the following morning he was quite comfortable lying in bed, although he was dull and lethargic. He had only a little

(Continued on page 184)

## Southwestern Medicine

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#### THE HALF CENTRY MEETING OF THE NEW MEXICO MEDICAL SOCIETY

Elsewhere in this issue is printed the program of the New Mexico Medical Society's annual meeting, to be held in Santa Fe, N. M. on May 19, 20 and 21. It is to be noted that this is the semi-centennial meeting of this organization, and they have a very fine program with which to celebrate their half century meeting.

It is sometimes surprising to the uninformed to learn that Santa Fe yields only to St. Augustine, Fla., in the distinction of being the oldest city in the United States to be founded by European explorers. Four hundred years ago Santa Fe was founded by Spanish explorers from old Mexico, headed by Coronado. An interesting side trip can be taken by automobile travelers, if they will swing south from the main highway and take the desert road which goes through Zuni, one of the "Seven Cities of Cibola," and passes Inscription Rock, on which the Spanish explorers carved their names and messages with the dates they camped in the shade of this vertical wall of granite.

Santa Fe has many things of historical interest, as well as many prehistoric ruins, to interest the visitor. Time should be taken, when going to Santa Fe, to visit and enjoy all these.

#### PROGRAM

FIFTIETH ANNUAL MEETING, NEW MEXICO MEDICAL SOCIETY

Santa Fe, N. M., May 19, 20 and 21, 1932 Thursday, May 19, 10 a. m.

Addresses of Welcome by Hon. Arthur Seligman, Governor of New Mexico, and Hon. David Chavez, Mayor of Santa Fe. Reply to Addresses of Welcome...Dr. M. K. Wylder

Albuquerque, N. M. ....Dr. F. D. Vickers President's Address... Deming, N. M.

2 p. m.

Dr. W. S. Lemon, Rochester Minn. "Biological and Clinical Aspects of Tuberculous Pleurisy with Effusion.'
Discussion by Drs. Leroy Peters, F. E. Mera and
Robert O. Brown.

Dr. C. W. Irish Pasadena Calif.

"Neurological Diagnostic Criteria in Abscess of the Brain." Discussion by Drs. A. B. Stewart and A. H.

Vogt. 3. Dr. W. C. Menninger, Topeka, Kans.

"Psychiatry."

Discussion by Drs. J. Rosslyn Earp, Clyn Smith and C. W. Irish.

Visit to the Laboratory of Anthropology.

Afternoon Tea at Home of Director Nusbaum,

for Members of Society and Guests.

8 p. m. Dr. W. D. Sansum, Santa Barbara, Calif. "Treatment of Underweight, Indigestion and Allergy."

Discussion by Drs. R. O. Brown, J. R. Van Atta C. H. Gellenthien.

Dr. Earl D. McBride, Oklahoma City, Okla. "Arthritis."

Discussion by Drs. R. W. Mendelson and V. E. Berchtold.

Dr. L. M. Miles, Albuquerque, N. M.
"Ureteral Picture in Female (with Cases)."
Discussion by Drs. Harold T. Low, James Vance and D. W. Rife.

#### Friday, May 20. 9:30 a. m.

Dr. Albert Soiland, Los Angeles, Calif. "Management of Cancer of the Breast."

2. Dr. W. S. Lemon, Rochester, Minn.

"Primary Carcinoma of the Bronchus."

Discussion of Nos. 1 and 2 by Drs. John M.

Flude, C. G. Toland and Hugh Jones.

3. Dr. C. G. Toland, Los Angeles, Calif.

"Object of Formation of Cancer Commission of State Medical Societies."

Discussion by Drs. John M. Flude and E. F. Mc-Intyre.

#### 2 p. m.

 Dr. P. G. Cornish, Jr., Albuquerque, N. M. "Surgery of the Chest." Discussion by Drs. E. L. Ward, J. W. Hannett and Leroy Peters.

Dr. Hugh Jones, Los Angeles, Calif. "Bone Tumors."

Discussion by Drs. W. R. Lovelace, R. E. Mc-Bride and James Vance.

3. Dr. J. W. Hannett, Albuquerque, N. M. To be announced. Discussion by Drs. E. W. Fiske and P. G. Cornish, Jr. Meeting of the House of Delegates. Election of Officers.

Evaning:-Dinner Dance.

Saturday, May 21. 9:30 a. m.

1. Dr. J. W. Hendrick, Amarillo, Texas. "Adenomatous Goitre." Discussion by Drs. W. H. Woolston and W. S. Lemon.

Dr. Curt von Wedel, Oklahoma City, Okla. "Some Newer Phases of Plastic Surgery."
Discussion by Drs. P. G. Cornish. Jr., Hugh
Jones and H. M. Smith.

Dr. R. A. Duncan, Amarillo, Texas. "Brain Abscess from the Otologist's Viewpoint." Discussion by Drs. H. L. Brehmer and W. C. Barton.

2 p. m.

1. Dr. C. F. Milligan, Clayton, N. M. "Diphtheria." Discussion by Drs. M. K. Wylder and A. S. Lathrop.

Dr. Wm. Howe, Las Vegas, N. M. "Thirty Years' Experience in Obstetrics." Discussion by Drs. E. L. Ward and P. G. Cornish, Sr.

Motion Picture of Spinal Anesthesia. Report of House of Delegates. Resolutions.

#### MEDICAL LIBRARY IN PHOENIX

The plans and hopes of the medical fraternity of Phoenix for many years have come to fruition in the opening of the "Library of the Maricopa County Medical Society" in the Professional Building, 15 East Monroe Street. This journal has been instrumental in developing two medical libraries in the southwest. The El Paso County Medical Society's library was established many years ago and is an institution of dignity and importance. They secured medical journals in exchange for their bulletin and around those journals, and others for which they subscribed, the El Paso County Society developed its library. When they joined with the other three organizations in the creation of SOUTHWESTERN MEDICINE it was a part of the agreement that the exchange journals should continue to come to El Paso, which they have done. When the present editor was selected, in 1912, effort was made to secure duplicate copies of the exchange journals for the editor's office. This was successful in most instances, and those duplicate exchanges have been coming to Phoenix for the past ten years. They now form the nucleus of the library in Phoenix just as they helped develop the one in El Paso.

During the nast decade, several efforts have been made to establish a medical library in Phoenix. Many years ago, quarters were rented and a library started, but the rental on the quarters "cost too much" for the members and the plan was abandoned, the library being moved to St. Joseph's Hospital where a room was secured rent free. This has been the ostensible location of the library since that time, though little use has been made of the equipment.

With the construction of the new Professional Building, space for a "Club Room" was included in the plans and this was finally turned over by the building owners to the Maricopa County Medical Society for use as a library. In this room the magazines and books loaned by the members of the Society and by Southwestern Medicine are The Society has spent about being placed. one thousand dollars in purchasing filing cases, book shelves, tables, chairs and other equipment. With no item of rental to worry about, the Society has been able to engage a part time librarian who is arranging the magazines, indexing and cataloguing the books and journals, and in other ways placing the library equipment in such order that it may be used to the best advantage. Medical men of the southwest are urged to visit the library in Phoenix. It will be found on the twelfth floor of the Professional Building. Aside from the library equipment one of the most magnificent views to be obtained anywhere can be enjoyed from the library room. Spacious windows open to the north, east and west, giving unobstructed views of the city and valley in those directions. The building elevator runs to the eleventh floor, and it is necessary to walk up one flight of stairs, at the top of which a door opens directly into the library.

Elsewhere in this issue will be found a brief article by a member of the Library Committee, giving some pertinent information about the library and how to use it to the best advantage.

(NOTE: To be published next month)

THE MEDICAL CLINICS OF NORTH AMER-ICA; (Issued serially, one number every other month); Volume 14, No. 4; (Philadelphia Number—January 1931); Paper, \$12.00; Cloth, \$16.00, net; Philadelphia and London; W. B. Saunders Company;

One article in this number which makes the volume worth while is entitled "The Problem of the Colon Bacillus" by Dr. Martin E. Rehfuss. The cuestion of the pathogenicity of the colon bacillus for various tissues is discussed at length. The author's conclusion is that they migrate from the colon and lower intestine, where they normally belong, and may involve the kidneys, gall bladder and other

The administration of small doses of colon bacilli to laboratory animals, has produced immunity. The author wonders if immunity can not be produced in a similar way in human beings.

#### STAFF OF HOTEL DIEU (El Paso)

(Continued from page 180)

eosinophiles 3. Diagnosis:- Prostatic hypertrophy: cystitis: nephritis: terminal bronchopneumonia.

Dr. Murphy presented a case of hydronephrosis. Hospital number B 6318, patient male, age 22. Had complained of pain in the left side of his abdomen, just under the margin of ribs since the age of 11 years. Pain usually preceded by constipation and when most severe was accompanied by nausea and vomiting. For the past year patient was able to feel a tumor in the region referred to. The severity and frequency of the attacks were increasing. His physician in Detroit took x-rays of the stomach and told him his spleen was enlarged. X-ray showed pressure from the left side on stomach, pyelogram of right kidney showed pelvis slightly enlarged and left showed a large distorted kidney with large pelvis. Physical examination revealed a young man appearing to be in fair state of health. Head negative for any pathology, as were chest, neck and abdomen. The spleen was not enlarged and no palpable masses in the epigastrium. There was a suggestion of enlargement of the left kidney but not definite. Urine examination Dec. 8th, reaction acid, albumin negative, sugar negative. mucus and epithelial cells. Pyelograms were ordered and patient referred to Dr. Multhauf for further study. Findings; bladder negative. Indigo-carmine given intravenously; right 3 minutes, appearance; good concentration. Left 12 minutes, appearance trace. Report of pvelograms; right kidney normal, compensatory enlargement. Left kidney, 72 cc. pussy urine obtained from the pelvis and 25 cc. sodium iodide injected, showing large hydronephrotic sac. X-ray reports: The right kidney appears normal. The left kidney appears enlarged. Small amount of the dye in the lower calvees shows some distortion of the calvees suggestive of pathological kidney. Recheck 3 days later: Pyelogram of left kidney shows marked dilatation of the calyces with kidney greatly enlarged, suggestive of a hydronephrosis. Urinalysis; right kidney negative to microscopic and cultural studies; left kidney showed 50-70 pus cells per H. P. F. Impression: - Congenital hydronephrotic kidney. Patient admitted to the hospital Dec. 17th, temperature 102.4, pulse 110, respiration 25. Treatment. cathartics, liquids forced and aspirin. Rising temperature prior to operation. Dec. 19th usual kidney incision on left side. Many perinephritic adhesions. Kidney three times normal size and had to be aspirated (about one quart of chalky urine escaped) to enable delivery. Lower pole extended below crest of ilium. The cortex was greatly lobulated and the pelvis was a much enlarged sac. A soft rubber tube drain was used and the wound closed. As the kidney pedicle was being incised a little of the infected urine escaped into the wound. There was surprisingly little bleeding during the whole operation. Condition good until following evening when distention began and patient vomited twice. A duodenal tube and enemas were used, digifolin was administered, nausea and vomiting continued. Dec. 23rd. abdomen was opened, no definite evidence of peritonitis found. Blood culture and culture of abdominal fluid negative. Temperature 107, pulse 162, respiration 30. Chest was clear, mind clear up to last few hours, no cerebral signs. Respirations ceased Dec. 24th.

Post mortem: Abdomen, fluid slight and clear. no evidence of peritonitis. No evidence of intestinal obstruction. Right kidney and ureter normal, they were removed for study. Left kidney region, no break in the peritoneum, small vessels in region of cut renal stump injected but no abscesses found.

Finger introduced through old kidney incision and bimanual examination done. Pelvis negative, mesenteric vessels no thrombosis. Stomach and spleen negative, lungs negative.

Discussions by Drs. Garrett and E. B. Rogers. Dr. Garrett is of the opinion that in cases of the kind presented by Dr. Murphy uremia is not unusual, blood chemistry would be interesting. Dr. Rogers stated that it is interesting to note what can happen after an operaion on he outside of peritoneum.

Dr. W. L. Brown discussed the case, stating that a ureteral character was inserted to drain but the fluid was too thick to drain through the catheter. The kidney was large and had to be punctured and aspirated before it could be removed. There is possibly one other thing that might have been done. The kidney could have been drained at the lower pole and removed later. An unusual thing noted was that there was no discharge, no bleeding at the time of operation, it was the dryest field ever seen. The abdomen had no pus, there was no peritonitis, no ileus or obstruction. The infection went through and through, a general sepsis. Right kidney was normal and urine negative.

Dr. White showed specimen of kidney, greatly enlarged, measuring 16 cm. long. Greatly enlarged and thickened pelvis. Kidney fairly smooth and somewhat lobulated. Capsule is somewhat adherent. In one pole there are some hemorrhagic areas. On section the pelvis and calyces are all greatly distended, the walls are considerably thickened. The hemorrhagic area extends clear through the cortex. Section through this area shows extensive abscess formation and some hemorrhage. Section of the rest of the kidney tissue showed it to be in a fair state of preservation. Diagnosis:—Pyelonephrosis with abscess formation. Dr. Waite also showed specimen of a polycystic kidney.

# CASE DISCUSSION (Epigastric Pain and Indigestion For Four Weeks)

(Continued from page 181)

abdominal pain. He felt better than he had. He showed no change until four o'clock in the afternoon, when the student taking the history noticed that it was becoming more and more difficult for the patient to focus his attention on the history and that he complained of increasing abdominal pain. This progressed rapidly, and he was really in distress after an hour and had signs then of a rather typical surgical abdominal condition with diffuse tenderness on release of pressure. The liver dullness was not obliterated. About five o'clock, when I saw him, the surgical service was called immediately.

He was in the ward such a short time that the laboratory findings are rather scan'y. The urine showed much bile. The red blood count was 4,400,000, the hemoglobin 70 per cent, the white blood count 3,900. The smear was interesting in that it showed 4 per cent of very young polynuclears, 4 per cent myelocytes and 1 per cent myeloblasts. The icteric index was 50 to 75. A liver function test showed 100 per cent retention of dye in thirty minutes. A van den Bergh test showed 16 milligrams of bilirubin.

The temperature was normal at entrance. At the time when he developed this acute surgical condition his temperature was 99.2/ by rectum and his white cell count was 3,000.

Immediately exploration was decided upon and done. He went steadily downhill after the operation, and died within twenty-four hours. When he

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was examined just before death he was thought to have bilateral pneumonia.

#### Discussion by Dr. Milloy

Stomach trouble coming on in a man of 52 years of age, without history of previous attacks, and with ascites, jaundice and dull aching pain in the epigastrium means malignancy of the carcinomatous type. Relief of distress by soda and food might make one think of peptic ulcer which might have perforated slowly, causing the acute surgical belly and free fluid in the flanks, but ulcer will not explain the jaundice and dye retention of the liver. The only question to decide is the location of the carcinoma, that is, the primary site. It may have been in the head of the pancreas, the stomach, the gall bladder, or the liver. The head of the pancreas best explains the picture. This would account for the jaundice. Apparently here was an almost complete obstruction of the common duct. A primary site in the head of the pancreas with extensive secondary metastases in the liver would account for the complete retention of the dye. It could just as easily have been in the gall bladder or bile duct, however. If the cancer was in the stomach, they sould have been able to palpate the mass. The lethargy and weakness is easily explained by the acute jaundice. Just what caused the acutte surgical belly is rather doubtful; I doubt if it really was such. The blood picture offers no clue, as patients with carcinoma may have either a leukocytosis or aleukopenia. Complete biliary obstruction could have resulted from the rupture of a carcinomatous gall bladder.

Diagnosis: Carcinoma of the head of the pan-

creas.

#### Discussion by Dr. Flinn

The case history is that of a 52 year old laborer who had suffered from gastric distress and jaundice of four weeks duration. While in the hospital he developed an acute surgical condition, is operated

upon, and dies promptly.

The liver is said to be small and therefore one might easily guess that this patient had acute yellow atrophy of the liver. He had jaundice plus a small liver, However, there are many points against it. In the first place atrophy is exceedingly rare; secondly, we do not know that the liver is small; the gas in the abdominal cavity may have given this impression. It is almost impossible to diagnose this condition in the absence of incessant vomitting and cerebral symptoms.

Could this picture come as a result of inflammation in the liver or bile tracts? Cholelithiasis might very well produce the jaundice and perforation of the gall bladder or intestines, or an intestinal obstruction might produce the terminal picture

What about a carcinoma at the head of the pancreas? A carcinoma of the stomach with metastases? Either of these seems reasonable. A cirrhosis of the liver might also account for the jaundice. How are we to account for the low white count? Leukocytosis is the rule in carcinoma of the liver. Is it possible that we are here dealing with TNT poisoning or some other form of toxic hepatitis.

In spite of the negative previous history I am inclined to believe that this man has an old chronic cholecystitis which was the direct cause of his ceath. There is the possibility of course that there is malignant degeneration. The terminal picture may have been produced by rupture of the gall bladder, perforation or obstruction of the intestines or localized peritonitis. While from a statistical standpoint this man should have malignancy I am forced to make a diagnosis of acute and chronic gall bladder disease (cholelithiasis and cholecystitis,

#### Discussion by Dr. Stroud

This is a short history and few findings, probbly because the case was in the hospital for such a short time. We have the patient's statement of only four weeks' dull pain in the epigastrium with stomach trouble.

The patient was dull and confused, he had a marked jaundice beginning three weeks before and progressing, and had lost weight rapidly in that time. We are in doubt as to the size of the liver, one examination being that the liver dullness was not obliterated. Whether the latter means that the small amount found was not obliterated is open to question. Evidently there is some fluid in the



on request.

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abdomen. With this is found a leukopenia and young polynuclear cells and myelocytes up to four

per cent.

The abdomen suddenly became surgical and a little fever showed just before operation, which was done and the man only lived for 24 hours. An acute abdomen, so called, means generally the rupture of a viscus into the abdominal cavity. A leukopenia means generally some debilitating disease which affects the bone marrow. The bone marrow however is capable of some production because young forms of leukocytes are found. The disease is probably non-inflammatory because the fever was not present before the acuteness set in. At least we have no record of it. There is some hemolysis as shown by the van den Bergh test, although the red elements of the blood show slight anemia only.

The trouble being relieved by soda in the early history points away from carcinoma of the stomach and more towards an ulcer although carcinoma cannot be ruled out. The liver certainly does not show enough increase in size to justify a diagnosis of carcinoma of that organ. Carcinoma of the bile ducts and gall bladder could account for the jaundice. The leukemieas are excluded because of no mention of adenopathy or splenic enlargement. A rather slow acute yellow atrophy of the liver is suggested by the small liver and yet there could hardly be an abdominal condition sufficient to warrant exploratory surgery in that condition. Had he gone on to death without operation that would be close to the condition. A carcinoma of the head of the pancreas should have given more symptoms formerly before it grew large enough to press on the bile tract.

A carcinoma of the pylorus with extension to the bile tract is a possibility, or primary carcinoma of the gall bladder with rupture of that organ is possible. Cirrhosis of the liver should have given a picture of enlarged liver, and yet this could have been a late case without symptoms earlier in the disease to disturb him.

Aplastic conditions would not give just this picture as there are no supporting signs, no adenopathy of Hodgins, no splenic enlargement, and the jaundice is more severe than usually found. These possibilities must be considered, even though the red celled anemia is not marked.

red celled anemia is not marked.

Diagnosis: Carcinoma of the pancreas, pylorus or of the gall bladder.

Possible acute yellow atrophy of the liver. Pathologic Discussion by Dr. Bradley

There was an early acute general peritonitis, the serosal surfaces being injected and covered by fibrin. The duodenum showed two ulcers, both in the first portion a short distance beyond the pylorus. The first ulcer, the one that had perforated, was about one centimeter beyond the pylorus. About one centimeter beyond that was the second ulcer. Both had the appearance of acute active ulcers. There were small varicosities in the esophagus just above the cardia.

The liver was the most interesting part of the autopsy. It was extremely small, weighing 850 grams. It was of dark greenish color and the surface was for the most part smooth but with numerous small scattered slightly elevated light greenish-yellow areas. It was flabby, but elastic to the touch, rubbery in consistency. The surface was finely and closely granular. The large granules or nodules were light yellowish or greenish. On section the bulk of the liver substances was light reddish and lacked the usual structural markings. The surface was sprinkled with numerous small light yellowish or greenish nodules. The gross appearance was that of acute yellow atrophy with



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beginning regeneration. Microscopic examination confirmed that.

The lungs were markedly edematous and congested but showed no definite consolidation. The coronaries showed marked sclerosis but no diminution of their lumen. The examination was otherwise negative. We have no information to throw

light upon the blood picture.

I have a section of the liver showing the extent of the process. The small scattered irregular dark purplish masses represent the islands of remaining liver tissue. The tissue between them is vascular connective tissue, showing a quite marked mononuclear and a moderate polymorphonuclear infiltration. You can see how extensive the destruction of the liver tissue is, all this area now in the field consisting merely of connective tissue with numerous bile ducts scattered through it.

#### **BOOK REVIEWS**

TRAUMATOTHERAPY. By John J. Moorhead, B. Sc., M. D., F. A. C. S., Professor of Surgery and Director, Dept. of Traumatic Surgery, New York Post-Graduate Medical Scchool and Hospital; Surgical Director, Reconstruction Hospital Unit; Colonel Medical Officers Reserve Corps, U. S. Army; 574 pages with 625 illustrations; Philadelphia and London; W. B. Saunders Co.; 1931; Cloth, \$7.00.

This is a book containing 574 pages, divided into 26 chapters. The headings of the chapters give an excellent conception of what the book contains: Contusions, wounds, dislocations, fractures, closed cavities trauma, the traumatic neuroses, injury by electricity, x-rays, radium, and radiant light, amputations, bone plastics, soft part plastics, osteoma exostosis, myositis Ossificans, trauma and malignancy, post-traumatic deformities and disabilities,

first aid treatment, standardized procedures, antiseptics, drugs, dressings, splints and apparatus, anesthesia, general, local, spinal, and rectal, restoration of function, treatment of injuries in the young, treatment of injuries in the aged, treatment of old injuries, manipulations in certain joint injuries, combined traumatotherapy and after care, medicolegal and allied aspects, the prone pressure method of artificial respiration, as recommended for first aid crews, and the Carrel-Dakin technic.

The book is profusely illustrated. This seems to

The book is profusely illustrated. This seems to be an extremely practical volume especially for the man who wishes to have a book that covers a variety of subjects. The author's style is clear so that the subject matter is easy to understand.

O. H. B.

LEGAL MEDICINE AND TOXICOLOGY. By Ralph W. Webster, M. D., Ph. D., Clinical Professor of Medicine (Medical Jurisprudence) in Rush Medical College, University of Chicago; Professorial Lecturer in Medical Jurisprudence in Toxicology in the University of Chicago; Toxicologist to the Coroner's Office, Cook County, Illinois; Attending Chemist, Presbyterian Hospital, Chicago; Director of Chicago Laboratory, Clinical and Analytical. W. B. Saunders Company, 1930.

Saunders Company, 1930.

In this work Dr. Webster has condensed into one volume the essentials of this important field of medicine. The chapters on legal procedure and on the legal rights and obligations of physicians give a clear, authoritative statement of this relation of the physician and his patient. The first half of the book deals with all phases of legal medicine, furnishing frequent references to court decisions and to the sources in medical literature of the material quoted. The second half of the book is devoted to

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(C. N. B.)

TEXT-BOOK OF GYNECOLOGY: By Arthur H. Curtis, M. D., Professor and Head of the Department of Obstetrics and Gynecology, Northwestern University Medical School; Chief of the Gynecological Service, Passavant Memorial Hospital, Chicago; 380 pages with 222 original illustrations. Philadelphia and London; W. B. Saunders Company; 1930; Cloth, \$5.00.

Dr. Curtis has a useful practical book which is not large, contains about 380 pages, but yet is sufficiently comprehensive to give all the excellent and important factors in gynecology. The work is based upon his former work, which is known as "Gynecological Diagnosis", a monograph printed for the students of Northwestern University Medical School. Dr. Curtis has a concise easy-to-read style. His sentences are pared down so they do not contain excess words. Each section has a comprehensive bibliography. The drawings are done mostly by Tom Jones and therefore are excellent. Many of his chapters are short, containing but one or two pages. The book is recommended as one of the best on the subject.

О. Н. В.

THE AUTONOMIC NERVOUS SYSTEM: by Albert Kuntz, Ph. D., M. D., Professor of Anatomy in St. Louis University School of Medicine; illustrated with 70 engravings; Lea and Febiger, Philadelphia; \$7.00.

If there has been anything written on the autonomic nervous system to which Kuntz does not make reference, it certainly escaped being properly catalogued in the index medicus. The subject is dealt with both comprehensively and practically. The scientific data assembled are overwhelming. The relatively meager practical application of them indicates the burden placed at the door of the medical profession. The last two chapters, Nos. XIX and XX, are devoted to a study of the autonomic nervous system in disease and surgery. The encouraging results obtained by sympathetic ganglionectomy and ramisection in Raynaud's disease and in chronic arthritis, point to the development of a new chapter in medicine.

Progressive physicians will wish to keep abreast of the advances being made in the study of the autonomic nervous system. This is recommended as fhe best book so far as known by the reviewer, which has appeared on the subject. Kuntz has excellent use of the language. The publisher's art is of the best. Typographical errors are practically absent.

THE PRACTICAL MEDICINE SERIES: Comprising eight volumes on the year's progress in Medicine and Surgery. General Therapeutics, Bernard Fantus, M. S., M. D.; Professor of Therapeutics, University of Illinois College of Medicine; member, Revision Committee United States Pharmacopeia and of National Formulary Revision Com-



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mittee; and Louis B. Kartoon, B. S., M. D.; Instructor of Medicine, University of Illinois College of Medicine, Series, 1931, Chicago; The Year Book Publishers, Inc., 304 Dearborn Street, South. \$2.25.

As the patient is more interested in cure than in diagnosis, so the physician, after the diagnosis, should be keenly interested in therapy. Fancus' resume of the last year's advancements in methods

of treatment gives many suggestions.

There are many new ideas on foods, endocrines, drugs and physical agents, and so forth. There are important discoveries, such as the use of iodine in goiter, the liver and stomach extracts in pernicious anemia, adrenal cortex in Addison's disease, fever in psychosis, and iron and copper in secondary anemias.

The reviewer finds this to be an extremely prac-

tical volume.

O. H. B.

SIMPLIFIED DIABETIC MANAGEMENT, by Joseph T. Beardwood, Jr., A. B., M. D. F. A. C. P., Chief of Diabetic Clinic and Associate Visiting Physician Presbyterian Hospital in Philadelphia; and Herbert T. Kelly, M. D., F. A. C. P., Associate in Diabetic Clinic, Presbyterian Hospital in Philadelphia phia. Diets prepared with the collaboration of Elsie M. Watt, A. B., formerly Dietitian Diabetic Clinic Presbyterian Hospital in Philadelphia; Illustrated; Philadelphia, London, Montreal; J. B. Lippincott Company.

This book is prepared primarily as a manual for the diabetic; the physician not especially trained in diabetes will find in it the things he needs to know

in outlining the treatment of the disease.

The symptoms of diabetes and diabetic coma are discussed. Routine care with diet control and insulin therapy is given with description of hypoglycemia, and its treatment. Complications are briefly discussed. The chapter on diabetic hygiene is instructive.

The last half of the book is made up of tables and diet charts. The diet prescription chart is presented in a manner to make the calculation of the diabetic's

diet a simple matter.

O. H. B.

SURGICAL PATHOLOGY OF THE DISEASES OF BONES, by Arthur E. Hertzler, M. D., Surgeon to the Agnes Hertzler Memorial Hospital, Halstead, Kansas; Professor of Surgery, University of Kan-sas. Cloth, 272 pages, with 211 illustrations; Phil-adelphia. Montreal, and London: J. B. Lippincott

Company, 1931.

This monograph is printed on excellent paper, and the illustrations are well produced. The illustrations are chiefly of roentgenograms and microscopic tissue preparations, and very completely visualize the pathology described in the text. The author emphasizes the necessity of laboratory and roentgenographic study of bone lesions, and indicates that this is the road to future advancement in knowledge and treatment of bone pathology. "Now, however, since to be uncertain of one's opinion as to the nature of a bone lesion is not a reproach and biopsies are respectable, real diffusion of knowledge of the fundamental factors may be expected. As usual, the recognition of darkness precedes the light."

The material is presented under three heads: pathogenesis, pathology, and histology. It very concisely covers practically all types of bone pathology. The text is well prepared and is a most readable volume. It will be found a valuable addition to the library of any practitioner, especially of the sur-

geon or pathologist.

THE MEDICAL CLINICS OF NORTH AMER-ICA; (Issued serially, one number every other month.) Volume 14, No. 2. (New York Number— September 1920) Philadelphia and London; W. B. Saunders Company, 1930.

There are a number of interesting articles in this issue among which are: Peribonchial Infiltration in Children, by Henry Heiman and Philip Cohen; Treatment of Diseases of the Thyroid Gland, by Dr. Connie M. Guion; Pathogenesis of Peptic Ulcer, by Drs. I. W. Held and A. Allen Goldbloom.

Held and Goldbloom are of the opinion that spasm of the vessels in the vicinity of the ulcer may have been the cause which lead to the ulcer. Secondary factors may be an unbalance of the vegetative nervous system; certain occupations tend to cause constant irritation of the stomach and perhaps lead to injury of the wall and hence to ulcer. This article covers 44 pages and is well worth reading, as are many of the others.

O. H. B.

MEDICAL CLINICS OF NORTH AMERICA; (Issued serially, one number every other month.); Volume 15, (Boston Number-Jan. 1932); octavo of 268 pages with 18 illustrations; per clinic years, July 1931 to May 1932; paper, \$12.00; cloth, \$16.00 net; Philadelphia and London; W. B. Saunders Company, 1932.

This volume has some especially interesting papers and the mere mention of a few of the authors will recommend the volume more than any number of words that I could write. The authors to be mentioned: Christian, Joslin, Lord, Murphy and Blumgart. These volumes are always full of worth-

while material.

O. H. B.

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SURGICAL DIAGNOSIS: VOLUME III AND SEPARATE INDEX VOLUME: completing the new work by 42 American Authors; Edited by Evarts Ambrose Graham, M. D., Professor of Surgery, Washington University Medical School; Three Octave volumes; totalling 2750 pages, containing 1250 illustrations; and Separate Index Volume; Philadelphia and London; W. B. Saunders Company; 1930; Cloth, \$35.00 a set.

Volume III discusses the surgical diseases of the thorax, bronchography, diseases of the breast, liver and biliary passages; pancreas; rectum and anus; genito-urinary organs; psychoses and psychoneuro-ses; skull, brain and its membranes; spinal cord; sympathetic nervous system and Schilling differential blood count. The reception of the previous volumes makes it unnecessary to say more than that this volume has the same high standard as have the previous volumes. The general index is a separate volume and would appear to be well designed.

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J. A. M. A ..

M.D., Waco, Texas.

Dec. 19, 1931,

P. 1914 Answer.—There is no danger to mother or child from therapeutic doses of viosterol (irradiated ergosterol) given during pregnancy. In fact, such medication probably would be of advantage, owing to the excessive drain of calcium and phosphorus that takes place during this period. This medication is especially indicated in cases in which the intake of calcium compounds has been insufficient.

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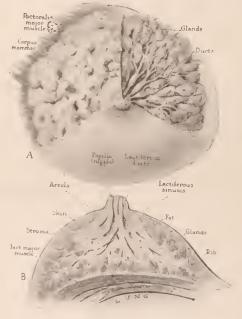
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## THE USE AND DEVELOPMENT OF OUR LIBRARY

ORVILLE HARRY BROWN, M. D. Phoenix, Arizona.

The library of the Maricopa County Medical Society is located in the tower room, twelfth floor of the Professional Building, in a room about 35 feet square.

A visit to the library at the present time will show book cases on all available wall space, nearly filled with magazines and books. On tables are recent issues of nearly a hundred medical journals. Stacked around in the lobby and various corners are boxes of magazines and books awaiting classification and filing. The wall cabinets are lettered, one letter to each section.

The Journal of the American Medical Association occupies the top shelf of the section near the entrance. In the main, the journals are filed by years; that is, the journals for 1932 are all put in one section, a box for the numbers of each journal for the year 1932. The journals for 1931 are in a section adjoining the one for 1932, and journals for 1930 are next to those of 1931, and so forth.

A card index file of the journals is arranged by years, with all available journals for any particular year indexed alphabetically. On each card will be found the section letter indicating the location of the journal; for example, if a person wishes to see an article in the Southern Medical Journal for 1928, he will go to the card index and turn the cards to 1928 and then find the Southern Medical Journal card. On this will be

designated the section in which the journal will be found. By going to this section, he will find that the boxes are arranged alphabetically.

In order to conserve space, it has been found necessary in certain instances to file two years or more of a journal in one box; therefore, it is particularly important for members who use the library to consult the card index file to find the location of the journal which is being sought. If I have not been able to make this clear, a visit to to the library at the time the librarian is present, will get an explanation from her which will help in the understanding of the arrangement of the library.

Every member who has journals in his office or home should immediately send there to the library. Occasionally a number is missing from certain files, which may be found by cooperation of all in this request.

We have many duplicates. It has been proposed that duplicates be stored at the two hospitals, in order to build up a library for the hospitals. It will be made plain with the hospitals that these are loaned and that, if we need them to fill out our files at any time, they will be drawn upon. Duplicate books which come into possession of the library also will be distributed to the hopsitals as loans.

It is possible that our membership contains those who are not experienced in the use of a library. Such a member may, on going into the library, be like the person who went into the forest but could not see the forest for the trees. One might not be

able to find the article sought because of the large number of journals. We will suppose, for example, that a person has a specific article he wishes to see. He knows the name of the author but does not know in what journal it was published, not the exact title, nor in what year it appeared. The best procedure in such an event is to take the index medicus for the year in which the article might have been published. First turn to the name of the author and, if the guess is wrong as to the year, it is but a few minutes' search to go through eight or ten or more of the index medicus magazines, if necessary, to find the name and issue of the medical journal in which the article will be found. When the name of the medical journal and year has been found, visit the card index file; turn to the year and thumb through the cards, which are arranged alphabetically, until the name of the journal is found. The card will designate the cabinet in which is the journal. It then takes but a minute to find the journal.

Again, suppose a person is writing a paper on a subject, for example, encephalitis. Pick up the index medicus for 1931, if it is the latest information on the subject which is being sought. It will be found that there are perhaps a hundred or more articles published in 1931 and listed in the index medicus. By referring to the list of journals at the library, it can be seen which journals are available, of those mentioned in the index under the heading of encephalitis. Inside of a few minutes, one usually can accumulate an armful of journals on any subject—enough at least for an evening's reading.

The library committee is anxious to have every member of the society give the librarian the names of the journals for which he is subscribing. We wish to reduce to a minimum the duplicates and to increase the number of journals. It has been suggested, and the suggestion seems to be an excellent one, that the various members of a specialty get together and find out what journals are being obtained by the members at the present time, whether there are any duplicates, and what other journals are desired. In this way the duplicates may be eliminated and

we shall be able to get certain journals that would otherwise be omitted.

A source of trouble which the library committee is anticipating is that the journals which are subscribed for by individuals will be allowed to lie around the offices for so long a time that they may get lost. We hope that the doctors will instruct their office attendants to guard zealously the magazines for which they have subscribed, for a short length of time, and then send them to the library.

Magazines and books may be withdrawn from the library and taken to office or home. A pad of paper hanging on a nail near the door is provided for registering the name of the magazine, volume number, whatever description is necessary, and the date and name of the physician taking it. It is hoped that every member will be loyal enough to the society to adhere strictly to this plan. The library will soon lose much of its usefulness unless the members are careful to do this and return the journals and books in due time. When the volume is returned, it should be placed upon the card catalogue file, and the slip cancelled. The librarian will see to returning the volumes to their proper places.

The library at the present time is in charge of Mrs. Rankin, a cultured and competent woman, and I believe the physicians will find her most helpful in any suggestions which they may wish to make. The library committee suggests that you take your library problems to her.

As yet the library is not kept under lock and key, and there have been several articles missed from it. It is proposed that the room be kept locked when the librarian or a member of the society is not there. In order to make it possible for the library to be used at all hours, it is suggested that we provide keys for all members who wish them. Each key will be paid for by the member getting it.

The library committee, Dr. Watkins, chairman, is anxious for suggestions for the good of the library. The thanks of the Society are due to Southwestern Medicine for the splendid exchange list of magazines and for the new books obtained for review.

## TREATMENT OF CAVITATION IN PULMONARY TUBERCULOSIS

(A Clinical Demonstration)

FRED G. HOLMES, M. D., F. A. C. P. Phoenix, Arizona

(A Clinical Demonstration before the Medical and Surgical Association of the Southwest, at their Seventeenth Annual Meeting, held in Phoenix, Ariz., December 3 to 5, 1931).

Tuberculosis is popularly considered a very slow disease. So it is, but it is only slow on the healing side, the spreading of infection often being very sudden and rapid.

The treatment of the difficult case of pulmonary tuberculosis is largely the treatment of cavitation, and the greatest strides which have been made in the rehabilitation of the chronic tuberculous patient have been in the methods of closing his cavity.

The formation of cavity is, by the elimination of tubercle bacilli and dead lung tissue, a useful and defensive mechanism. The persistence of the cavity is, however, a calamity of sufficient gravity that almost any measure for its closure is justified. The well-todo patient, not being compelled to work, may be able to live in spite of his cavity, but to the poor patient it means a loss of his working capacity. If he attempts to work, reactivation and spread of his disease is almost inevitable, and he finally succumbs. The working man with a medium sized cavity is doomed. Of course we have all seen men working with good sized cavities, but they are sufficiently rare to make them stand out in our memories, and often give us a false idea of their relative number to the vast majority of cavity cases either dead or disabled.

The reports from the Wallum Lake State Sanatorium of Rhode Island by Barnes and Barnes are astonishing to the average physician. In reporting on 1454 cavity cases they found a mortality of 80 per cent within one year, 90 per cent within five years, and an average duration of life of 15.8 months. They point out a relation between the length of life and the size and number of cavities. These statistics confirm what has been the opinion of phthisiologists for years.

Springman, in his review of 626 cavity cases over a period of 16 years reports a total mortality of 78.2 per cent, with a death rate of 61.7 per cent for the first two years. Of the survivors approximately 70 per cent were totally or partially disabled, and only 4.1 per cent of the whole number were working. Surely we cannot view with complacency a condition which allows the patient only one chance in twenty-five of being able to return to work, and are justified in almost any treatment which will better the outlook. Fortunately, if there is not too much delay, the methods used need not be so dramatic or dangerous.

There is nothing in the development of cavities which suggests chronicity. They often develop suddenly, and increase in size rapidly, after what seems to be only a slight cold. The classification of the National Sanatoriums Association places the cavity cases among the far advanced, but they may reach this stage very early in the disease.

Probably a little consideration of the classification of cavities would be helpful inasmuch as the different types have a different significance. The classification of cavities by Pinner is very useful, as they fall into his three divisions both from the pathological and radiological viewpoints, and, after classification, submit to certain generalizations regarding treatment which may guide us.

He divides them into: (1) small multiple cavities in dense infiltrated parenchyma, the so called honey combing or moth eaten appearance (2) more or less sharply defined round or oval cavities either with perifocal inflammation or thin well-outlined borders (3) irregularly shaped cavities with dense thick walls.

The first, or multiple small cavities embedded in densely infiltrated portion of the lung, has a bad prognosis. If it involves as much as a whole lobe, Barnes and Barnes in Rhode Island found that 80 per cent were dead in one year, the average duration of life being 9.5 months. It is a formal indication for collapse therapy. Artificial pneumothorax should be tried but is very likely to be impossible due to adhesions. Failing in it, any other type of collapse is justified.

The second type, or rounded cavity, is an

early lesion and is often seen on the first film. If a picture was taken before its appearance it would be seen that it usually appears in an area of diffuse infiltration as a bronchopneumonic or pneumonic area. Therefore, when first seen the cavity is likely to be surrounded by inflammation. As pointed out by Assmann, it is very often seen below the clavicle, more often nearer the dorsal surface and near the periphery. It is occasionally seen in the middle or lower lung field. This type of cavity very often disappears spontaneously and should be treated conservatively, for a time, if the condition of the patient will permit. Failing to close, it will eventually change into a cavity of the third class.

The third class is a thick walled cavity, distorted in shape, usually from the irregular fibrosis and tension surrounding it. It is this class of cavity which is usually the concern of the specialist in chest diseases, calling forth his whole repertoire in cavity closure from bed rest to thoracoplasty.

The purpose of this clinic is to recall to our minds some of the methods of cavity closure and to outline somewhat the long road down which we may have to lead the patient before we can return him to health with his cavities closed. The wise physician will caution his patient with cavity regarding the difficulties in closure, will prepare him for possible failure with one method, and encourage him to go on from one method to another and another if the case requires it. If too much stress is laid on one method, without the possibility of its failure being pointed out ahead of time, the patient may lose sight of the main objective and be weighed down with failure, feeling that the physician is floundering around from one thing to another rather than following out a well laid plan.

In trying to close a cavity, naturally the method entailing the least danger to the patient and still offering a reasonable chance of success should be tried first. One versed in the use of the more dramatic methods of closure is apt to spurn the use of simpler means which might well be used with less danger and expense to the patient, and perhaps even better ultimate results.

#### BED REST

Rest in bed has been used for so many years that its very familiarity seems to have bred contempt, but again I want to commend its use. Simple rest in bed will cause a disappearance of many cavities as completely and as permanently as can be done by any other method of treatment. It should be tried, especially, for those cases falling in the second classification, with round cavities, where the best results can be expected. The cases falling in the first and third classes will not be so likely to close under simple bed rest and generally would hardly merit a long continued trial. The following two cases are selected as illustrations of disappearance of cavity by simple bed rest:

CASE I. Miss M. H., age 25 years; sick since 1929. Never took much care of herself. First x-ray I have is in November, 1929, (Fig. 1) showing two cavities, one at apex and one 4 cm. in diameter below the hilus level. On bed rest the round cavity in the bottom of the lung disappeared as shown by x-ray examination in September, 1930 (Fig. 2). The cavity at the top did not disappear, however, and she was put under pneumothorax in September, 1930. Cavity at the top did not close by pneumothorax and we are going to use some other type of collapse therapy, probably thoracoplasty or extrapleural pneumolysis, depending on the condition found when the lung is out.

CASE II. Miss A. S., age 21 years. Diagnosed to have pulmonary tuberculosis in December, 1930, at which time x-rays (Fig. 3) show cavity at each apex. Expectoration was one ounce at that time but now is much less. Placed at rest in bed since February, 1931. At this time (November 25, 1931), the disappearance of the cavities is practically complete (Fig. 4). Other types of lung collapse were considered but as simple bed rest seemed to be proving effective and any other type would have been difficult, it was decided to persist in rest alone.

#### POSTURAL REST

Simple bed rest may be sufficient, but usually the physician is derelict in his full duty if he simply instructs his patient to go to bed. On our history sheets, where we record the instructions given the patient, there is one space marked for posture advice. Our attention is directed in every case towards a decision as to the side on which we may want him to lie. Some cases do not lend themselves to postural treatment, but in many cases the advice to lie on one particular side, properly followed, with posture pillow, if ap-

propriate for that particular case, may make all the difference between success and failure in the closure of the cavity. The postural treatment instituted early will be much more effective than when the patient has spent a long time in bed with no particular reference to posture and the cavities have become very thick walled and distorted. As an illustration of posture the following case is shown:

CASE III. Mr. E. D., age 48 years. Diagnosed in September, 1928, to have pulmonary tuberculosis. X-ray shows cavity 4 cm. in diameter below the hilus level on left side (Fig. 5). He was put to bed on the left side (o close the cavity. Four months later (Fig. 6), the cavity has apparently disappeared, patient has gained tremendously in weight, and been in good health since that time. The posture should be quite rigidly enforced, with several short periods a day when he is turned on the good side to drain the cavity.

#### REST WITH SHOT BAGS

Posture may often be combined with the use of weights on the chest. When the patient is on the side naturally they cannot be used, but when resting on the back, shot tags may be used over the cavity area either on one side or bilateral, if there are cavities on both sides. Bilateral cavitation may often be helped with shot bags, a fact worth remembering, as it is often not susceptible to any other simple treatment. The greatest weight I have ever seen used on one side was 27 pounds. This was done without any discomfort on the part of the patient, and the last ten pounds were added at the patient's request, as we felt that 15 to 17 pounds would be as effective as a greater amount. We frequently use as much as 10 pounds over both apices where there are bilateral cavities. In such cases, of course, postural treatment is not available. Patients usually become accustomed to the weights, so they can sleep with their shot bags in place. One case illustrating the use of a shot bag:

CASE IV. Mr. O. S., 21 years old. Diagnosed in October, 1927, to have tuberculosis with large cavity in upper left lobe (Fig. 7), and I saw him three months later. He was put to bed and tried under artificial pneumothorax, which was found impossible due to adhesions. A shot bag up to 10 pounds was used faithfully. The cavity was entirely closed in seven months, and has remained closed (Fig. 8). Patient is working, and subsequent examinations show no return of cavity or other active lesion.

#### ARTIFICIAL PNEUMOTHORAX

If the above mentioned methods of closing cavity be unsuccessful in a reasonable time, or if the condition of the patient demands haste, or the necessity for his early return to work be great, artificial pneumothorax should be considered. This is undoubtedly the most hopeful of all methods of treatment for the control of cavity, offering a maximum of closures with a minimum of danger. Not too long a time should intervene with simple bed rest, posture, or shot bags before it is employed, as there is an increasing danger of adhesions or thick walled cavity formation, which may prevent collapse. One may almost judge the efficiency of the phthisiologist by the percentage of his total number of cases which he attempts under collapse. In my experience, it is exceedingly rare to see a case which is collapsed where it should not have been. On the other hand, it is almost a daily occurrence to see a patient beyond help, where an excellent opportunity to collapse the lung has been neglected. When in doubt regarding collapse, always favor collapse. In the Brompton Hospital for Diseases of the Chest, the head of one of the services follows the routine of collapsing one or both lungs in every case which has a positive sputum. As much might be said for this rather drastic rule as could be said for the often followed criterion of demanding a good lung on one side before collapsing the other one. Fully half of the cases have activity in the best lung when the bad lung is collapsed. In the majority of cases the best lung either stands still or gets better, when the cavity in the bad lung is collapsed. The best protection for the already breaking best lung is often a collapse of the cavity ridden worst lung. If the patient is in the precarious, almost hopeless, condition of having both lungs breaking down in spite of bed rest and every other measure available, then it seems that his outlook will not be made worse by a collapse of one lung or a partial collapse of both lungs. It has been well proven that often the shortness of breath is less under double collapse than before, and almost invariably the toxemia is lessened. Of course we are not discussing the cases which are beyond the hope of help of any

nature, but rather those cases with advanced cavitation who still have enough lung tissue remaining, if the disease can be arrested and the cavities closed. I have collapsed cases with good results where the side selected to collapse could have been decided by the flip of a coin, so little choice was there between the two. A fair number of bilateral pneumothorax cases are able to work. Bilateral pneumothorax is not a medical curiosity but rather a perfectly legitimate, serious attempt at saving life, no more to be frowned upon than a decompression of the skull or a colostomy. If the patient can have his cavities closed and be given a greater degree of pulmonary rest, he may be able to return to good health, and what may seem like drastic measures be fully justified.

Out of the multitude of illustrations, which one might give of unilateral collapse, two have been chosen, chiefly because several points can be illustrated by them:

CASE V. Dr. I. E. K., age 30. First found to have pulmonary tuberculosis in 1922. There was a small cavity at the left apex at that time. After a short period of rest in bed of three and one-half months, he resumed work until his gradually failing health compelled him to stop in December, 1928. A year's rest in bed showed no improvement, and he first came under our care in December, 1929. The X-rays taken previously are very poor but do show the huge cavity at the left apex (Fig. 9). In spite of the size of the cavity and the fact that it was known to be of seven years' duration, pneumothorax was decided upon and instituted in December, 1929. A remarkably good collapse was obtained (Fig. 10), with cessation of practically all symptoms.

This case illustrates one point very well. Never let any preconceived notion of the impossibility of collapse deter one from making an honest attempt. The wisest man can do no more than hazard a guess about the possibility of collapse, and only the inexperienced would dare withhold treatment by reason of this guess. Probably the history which would lead one to feel most certain that collapse could not be done would be one of pleurisy with effusion which had later disappearcd, and even this is not infallible. I have collapsed several such cases. Shifting of the heart, retraction of the chest wall, distorted cavities, visible interlobar fissures, partial or total atelectasis, adherent diaphragm, history of dry pleurisy, or the presence of tuberculosis for any number of years, none of these should deter one from trying the collapse. Only the needle will tell the tale. Conversely, one should never assure the patient that it can be done, no matter how short the apparent duration of the disease, how free the history may be from pleural irritation, how freely movable the diaphragh, or how slight the involvement.

CASE VI. The case of Miss L. Mc. illustrates another point. She is 23 years of age, first diagnosed to have pulmonary tuberculosis in October, 1929, with cavity in upper right lobe (Fig. 11). Other methods having proved unavailing, she was placed under collapse in the spring of 1930. The cavity did not close under moderate pressure (Fig. 12). It is often advocated that high pressures be not used. However, if one does not close the cavity by pneumothorax, then some other form of more radical closure must be used. Keeping in mind our statement that "cavities must be closed," then one must go on to high pressures, or else stop the pneumothorax and try surgery. In this case high pressures freed the adhesions and closed the cavity (Fig. 13).

Bilateral pneumothorax is usually approached either as a surprise party for the patient who has had one lung collapsed for some time and then the other lung went bad, or it is decided that a double collapse is necessary before it is started on either lung, and a program of treatment outlined. Bilateral cavitation with a moderate amount of good lung on each side is the usual finding in such a case. With a fair amount of good lung, the cavities may close and the outlook be changed from one almost hopeless to excellent.

CASE VII. Mrs. G. S. illustrates many points regarding bilateral pneumothorax, which are worthy of mention. She was first diagnosed to have pulmonary tuberculosis in March, 1929. X-ray shows exudative process with small cavities in upper left (Fig. 14). She was kept in bed from that time until October, 1929, without any particular attempt directed toward closing the cavities on the left. Postural rest or shot bags were not tried and, when first seen by us, we felt that we should try pneumothorax without further delay. The right lung already showed slight signs of involvement, and it was felt that probably the best protection which could be given it would be to collapse the left side. This was done. At first the collapse was quite uniform from top to bottom without closure of the cavities (Fig. 15). Withou, any positive pressure, x-ray a few months later showed that a selective collapse had been obtained, with cavities closed, and

the bettom out and breathing (Fig. 16). It was expected that about this degree of collapse would be continued, as the other lung was showing signs of breaking. The mediastinum was beginning to show quite marked herniation, even though only negative pressure was used (Fig. 17). She moved away from Phoenix for a year.

During the summer of 1930, hay fever added to her difficulties. In the win er 1930-31 she was carried under pneumothorax without being looked at under the fluoroscope on account of serious illness in the family. Symptoms of cough, expectoration, and fever returned. On the return to Phoenix in March, 1931, it was felt that there was probably cavitation in the right lung, and it was decided to allow the left to come out and restore the state of only selective collapse. This would allow the mediastinal herniation to disappear, and a better idea of the real condition of the right lung obtained. It was seen at this time that there was definite cavitation in the right (Fig. 18). As the collapse of the left lung was gradually reduced, there was increase in cough, expectoration with a positive sputum, and afternoon temperature, all of which had disappeared after the left lung had been collapsed. However, these symptoms were from the right lung and increased on account of the fact that the mediastinal herniation had afforded a considerable degree of collapse of the right sided lesion, this collapse being released with the disappearance of the herniation. I have seen a number of cases in which cavities have disappeared in the best lung on account of the partial collapse afforded from the other side, but this type of cavity collapse must be handled with care and a certain amount of good luck. In this case it was decided to carry a bilateral collapse, and pneumothorax on the right side was instituted on May 1, 1931, effectually closing the upper lobe cavity (Fig. 19). The results were most gratifying, and practically all symptoms disappeared again. She has been allowed considerable freedom without symptoms, leading almost a normal, though sedentary, life. Condition of lungs on Nov. 30, 1931, shown in Figure 20.

She has been carried very lightly under collapse on the right side. On account of the fact that the lung is quite far out and has not been under collapse very long, it requires about three times as much air as does the left. Her routine now is one injection a month on the left of about 700 c.c. and two to three on the right of about 750 c.c. No positive pressures on either side have ever been used.

CASE VIII. Miss D. R., 21 years old, was first diagnosed to have pulmonary tuberculosis in July, 1927, with cavity in upper right lobe (Fig. 21), coming under our care in the fall. Rest in bed on the right side and a shot bag when on the back were of no avail in closing her large cavity. The left lung was not above suspicion. It was felt that the large cavity at the right upper must be closed, and pneumothorax was started in March, 1928

(Fig. 22). Within the next few months there was such definite extension in the left lung that the discontinuance of the pneumothorax on the right was considered. Several adhesions held the cavity open on the right. It was finally decided that the only hopeful thing to do was to disregard the left lung temporarily and go ahead and try and close the cavity on the right. Any other course would be admitting failure with the prospect of death or chronic invalidism for the patient. Pneumothorax was pushed on the right, the adhesions stretched, and the cavity partially closed. The left lung had by this time developed a good sized cavity (Fig. 23). Failing in complete closure it was decided to burn the adhesions after the method of Jacobaeus, a method so ably sponsored in this country by Ralph Matson. In October, 1929, as many of the adhesions were burnt as possible. A better collapse was obtained but not perfect (Fig. 24), and then after a second burning, the cavity closed entirely (Fig. 25). My associate, Dr. Victor Randolph, performed the surgery in this case as he has done in all the cases which we will discuss later. At this second burning, she had what promised to be a rather serious hemorrhage but it was readily controlled with pressure. This bloody fluid was removed a few days after the operation. The left lung was started on pneumothorax in July, 1930. Although there was an adhesion at the apex it did not prevent a good collapse of the cavity (Fig. 25). This case illustrates the degree to which bilateral collapse can be carried without inconvenience to the patient (Fig. 26). She is not short of breath and is able to do clerical work.

#### PNEUMOLYSIS (INTRAPLEURAL)

The intrapleural pneumolysis as a method of further aid in closing cavities in pneumothorax cases was mentioned in the previous case. It is of inestimable aid in bilateral cases, as they cannot be pushed with high pressures as can unilateral cases and so, if collapse is to be obtained, must have the adhesions burnt. It might be further illustrated by the following cases:

CASE IX. Mrs. W. J. P. was diagnosed to have pulmonary tuberculosis and given a few months rest in bed without closing her cavities (Fig. 27). Artificial pneumothorax was attempted and although a fairly satisfactory collapse was obtained, there was a good sized cavity held open by adhesions, (Fig. 28). The adhesions were burnt, and a satisfactory collapse was obtained (Fig. 29).

CASE X. Miss E. S., age 22, first diagnosed to have tuberculosis in February, 1930, with cavitation in upper lobe (Fig. 20). After a few months in bed on postural rest, shot bag, and so forth, the cavity was not closed, and she was started on pneumothorax. The cavity was not properly closed on account of multiple adhesions. This case was not under our care at that time, but I believe that the

same errors were made in the handling of the case that we have so often made ourselves under similar circumstances. A whole year was spent with the lung partially collapsed, the cavity remaining open and serving as a source of infection for the other lung which was already showing advancing disease Fig. 31, taken October, 1930). The pressures were consistently negative instead of an attempt being made to force the cavity together. This allows a thick wall to form, making more difficult the collapse by other means, and only postpones the evil day when the situation must be squarely met. We are all very prone to be guilty of this type of procrastination. We are fooled by the few symptoms caused by the partially collapsed lung with open cavity and do not like to face the fact that we have not solved the problem for the poor unfortunate. He is as far from the promised land of rehabilitation as ever. His cavity must be closed if he is to be able to work continuously, and the sooner some real attempt is made, the better the chance of success, and the less the economic loss. When this case came under our care in June, 1931, we found a partially collapsed lung on the left with an uncollapsed cavity held by adhesions, while on the right there was also cavitation (Fig. 32). To retreat and stop pneumothorax would leave her helpless with really nothing in prospect except chronic invalidism and death. It was determined to face the situation hopefully and, if need be, go down fighting. First, burn the adhesions on the left and get the cavity down if possible, and then start the right lung under pneumothorax, continuing them simultaneously. This was done. It was necessary to burr the adhesions on the left three times before the lung was entirely freed. Roentenogram (Fig. 33) shows the cavity on the right held by what looks like a single band of adhesion, and this was burned. It is hoped that the cavities can be closed on both sides. With the cavities closed, her outlook should be good. Note subsequent film (Fig. 34).

#### PHRENICECTOMY

Phrenicectomy must not be overlooked as one of the very simplest of all means of cavity closure, occasionally working where rest in bed, postural rest, shot bags, and pneumothorax have failed. It puts the patient to the least inconvenience and is the most economical of all methods of cavity closure. It disturbs the patient less than the usual initial pneumothorax treatment. Of course, it has limitations but occasionally one can close a cavity with it in an astounding way. Cavities at the apex respond almost equally as well as basal cavities, and I have chosen three cases for illustration.

CASE XI. C. F., male, age 33 years. Diagnosed to have pulmonary tuberculosis in March, 1930 (Fig. 35). He was put to bed and usual closure methods

tried including pneumothorax. Adhesions prevented collapse (Fig. 36). Phrenicectomy was performed in the fall of 1930 with striking results in the way of closure of his cavity (Fig. 27).

CASE XII. C. B., male, age 26. This was a very advanced case with extensive involvement throughout the right side with multiple cavities in the upper lobe (Fig. 38). Artificial pneumothorax was attempted but failed on account of adhesions. It was seen under the fluoroscope that the diaphragm was quite movable. Although it was felt that thoracoplasty would probably have to be done, phrenicectomy was done in November, 1929, with very gratifying results (Fig. 39). He continued to improve, gained 22 pounds, and lost all his symptoms and now seems perfectly well. Diaphragm has risen surprisingly high (Fig. 40).

CASE XIII. R. S., male, age 21. Diagnosed to have cavernous tuberculosis in fall of 1929 (Fig. 41). He was recommended for pneumothorax but was afraid, and it was not tried until the fall of 1930. It failed on account of adhesions. Postural rest and shot bag were of no avail. Finally phrenicectomy was done with splendid closure (Fig. 42). All symptoms have disappeared and he seems to have solved his difficulties.

#### EXTRAPLEURAL PNEUMOLYSIS

Failing in other methods of cavity closure, extrapleural pneumolysis may be used in certain cases with good results. I believe it is applicable to a comparatively small number of patients. It should not be used until pneumothorax has been tried and found ineffectual. With an apical cavity and a comparatively good lung below it may seem advisable to do a paraffin filling. Our own experience has been only fairly successful.

CASE XIV. J. B., male, age 38. Diagnosed to have pulmonary tuberculosis in 1927. An x-ray in 1928 showed very extensive exudative lesions throughout the upper two-thirds on the right and upper third on the left. He disappeared and was next seen until March, 1931, when an x-ray showed a huge cavity in the upper right with considerable clearing of the lesions in the lower right and upper left (Fig. 43). Although it seemed most improbable that it could be effected, pneumothorax was attempted but failed on account of adhesions. Paraffin filling was done in June, 1931 (Fig. 44). He had been expectorating about four ounces a day before the operation. This is reduced to about one-half that amount and he feels much stronger and better although not well.

CASE XV. Mr. C., diagnosed to have tuberculosis in 1928. First picture we have is in November, 1930. Pictures in 1931 show progress cavitation (Fig. 45). Pneumothorax failed. Paraffin filling done about a

month ago (Fig. 46). Cavity is not completely obliterated but partially closed.

CASE XVI. Mrs. M., age 26. Diagnosed to have tuberculosis in 1928. She first came under our observation in June, 1930, at which time there were large cavities in the upper right (Fig. 47). Pneumothorax was tried in the fall of 1930. An incomplete collapse was obtained. Phrenicectomy was then performed (Fig. 48). A first stage thoracoplasty was done in December, 1930. There was a bad reaction and it was feared a spread into the other lung had taken place. She gradually improved but the second stage was not done until May, 1931. This long delay together with an immobile mediastinum resulted in the cavities not being completely closed (Fig. 49). Paraffin filling was done in November, 1931. This seems to have closed the remaining cavity and she is in excellent condition.

#### THORACOPLASTY

Thoracoplasty as a method of cavity closure is rather a court of last resort. It will often succeed after the entire gamut of bed rest, postural rest, shot bags, artificial pneumothorax, phrenicectomy, and extrapleural pneumolysis with paraffin filling have been tried and found wanting. Thoracoplasty is usually approached with a great deal of trepidation on the part of the patient on account of the operative mortality, but is a very hopeful thing to do as far as elimination of cavitation is concerned. It is preferable to allowing the patient to try and work with a fair sized cavity on one side, presuming of course that the contralateral lung is in sufficiently good condition.

CASE XVII. Mrs. C. B. W., age 28. First taken sick in February, 1929. First diagnosed tuberculosis in January, 1930, at which time the involvement was extensive on right side (Fig. 50). Pneumothorax was attempted and failed, and phrenicectomy was done in February, 1930. Splendid results were obtained but not sufficient closure. Thoracoplasty was done in stages in April, 1931, and now cavities are apparently completely closed (Fig. 51). She is in good condition.

CASE XVIII. Mr. O. H., age 23. First diagnosed tuberculous in 1928. X-ray in November, 1930, showed at electasis of left lung with cavitation (Fig. 52). Expectoration about two ounces. Pneumothorax failed. Thoracoplasty was done in stages in May, 1931. He now is in splendid condition with cavities closed (Fig. 53).

CASE XIX. Miss O. J., age 30. First found to have tuberculosis in the fall of 1928. She came under our care early in 1929. At that time there were large

cavities in the upper lobe on the right with some surrounding exudation (Fig. 14). Pneumothorax was attempted (Fig. 15), but finally was abandoned after rather high pressures proved unsuccessful in closing the cavities. The lung was allowed to reexpand and in the fall of 1930 x-ray still showed the cavities (Fig. 16). She felt very well but had considerable expectoration still positive for tubercle bacilli. It was thought best to do a thoracoplasty which was done in stages in April, 1931 (Fig. 57), She is in very good physical condition, with only very slight expectoration. It is still undecided whether anything further is necessary, but it is thought that probably no other operative procedure will be required but only a little more bed rest.

CASE XX. Miss L. M., age 33. Frist diagnosed to have tuberculosis in 1927. She cam eunder our care in February, 1929, with extensive cavitation in the right lung (Fig. 58). Pneumothorax was started in July, 1929. A good collapse was obtained almost closing the cavities (Fig. 59). After a time, however, the cavity was pulled open by adhesions. Thoracoplasty was finally done with good results (Fig. 60). It would probably have been impossible ever to have allowed this lung to re-expand even though properly collapsed on account of the extreme amount of destruction before collapse. Thoracoplasty was probably necessary in this case in any event and should have been done earlier. It could probably not have been done without the preliminary course of pneumothorax on account of the very serious toxic condition of the patient which precluded operation.

These twenty cases have been selected in order to illustrate the various methods of closing cavities, and the purpose of this clinic will have been fulfilled if, through the medium of these patients, it has brought again to your mind the very important role that cavitation plays in the failure to rehabilitate the chronic tuberculosis patient. If it has been more clearly shown that a campaign for cavity closure must be planned, that it must be followed from one method to another and on to another until the cavity is eventually closed, then it has been all that I could have hoped.

Acknowledgment is made to Dr. Victor Randolph and Dr. Howell Randolph, who kindly cooperated in allowing several of their private patients to be shown in this Clinical Demonstration. Also to the Pathological Laboratory and Drs. W. Warner Watkins and H. P. Mills, of that institution who did the roentgen ographic work and make the x-ray interpretations.

#### CAVITY CLOSURE BY BED REST.

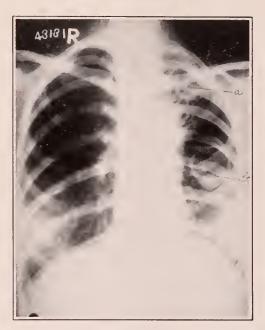


Fig. 1. Case I. Roentgenogram Nov. 30, 1929, showing two cavities on the left side, one at apex (a), and the other 4 cm. in diameter just below hilus level (b).

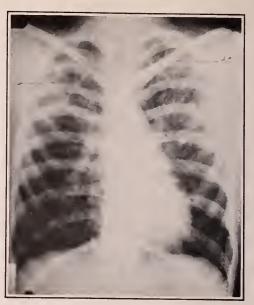


Fig. 3. Case II. Roentgenogram of December, 1930, showing cavity at each apex (a and b), and exudative involvment through both upper lung fields.



Fig. 1. Case I. Roentgenogram of patient shown in Figure 1, Sept. 5, 1930, showing complete disappearance of the cavity near hilus. Cavity at apex (a) has not closed, probably being held open by pleural adhesions.

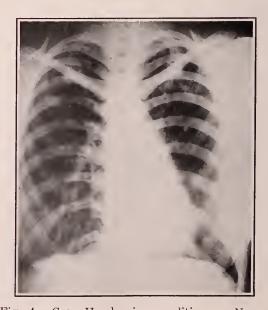
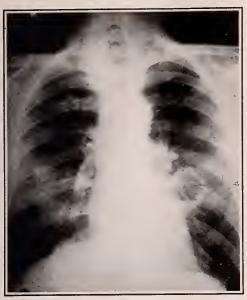


Fig. 4. Case II, showing condition on November 25, 1931, after rest in bed since February. Cavities have almost entirely disappeared, as have the exudative shadows through the upper lung fields.



Case III. Roentgenogram of Dec. 1, 1928, showing large cavity below left hilus (a) close to heart border, with some infiltration in lower right lung field.

#### CAVITY CLOSURE BY POSTURAL REST. CAVITY CLOSURE BY BED REST WITH SHOT BAGS.

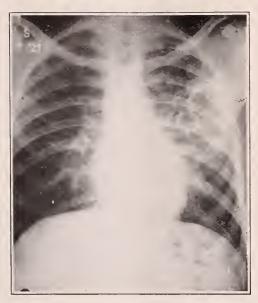


Fig. 7. Case IV. Roentgenogram of October, 1927, showing large cavity in upper left lung field (a), with surrounding exudative density.

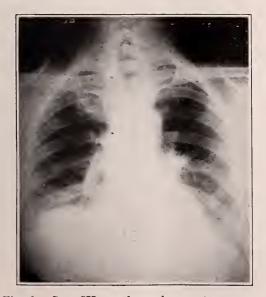


Fig. 6. Case III, as shown by roentgenogram of Aug. 5, 1929, after four months postural rest. Cavity in lower left lung field has disappeared. Note decrease in length of chest from gain in weight.

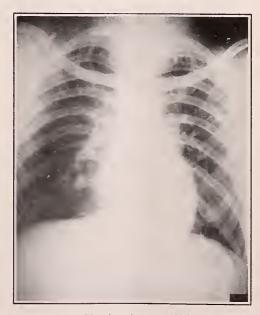


Fig. 8. Case IV, showing condition after seven months rest in bed with ten pound shot bag over cavity. The exudative density around the cavity has also disappeared.

## CAVITY CLOSURE BY UNILATERAL ARTIFICIAL PNEUMOTHORAX.

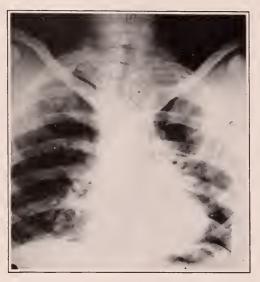


Fig. 9. Case V. Roentgenegram taken June 23, 1928, showing hugh cavity involving almost entire upper left lung field, (c,c).

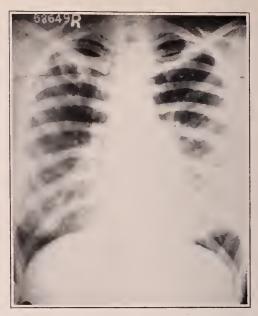


Fig. 11. Case VI. Roentgenogram of Oct. 25, 1929, showing cavity in upper right lobe below clavicle (a).

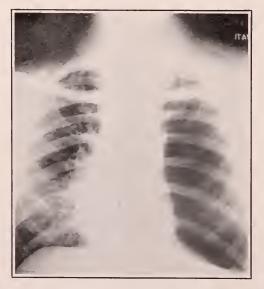


Fig. 10. Case V, roentgenogram taken Oct. 15, 1931, nearly two years after establishment of pneumothorax on the left side. Large cavity is entirely closed, with pressure sufficient to cause slight displacement of heart and mediastinum to the right.

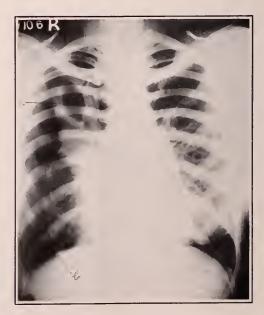


Fig. 12. Case VI, showing extent of pneumothorax under moderate pressure, and clear outline of unclosed cavity, (a), and pleural adhesion between lung and diaphragm, (b).

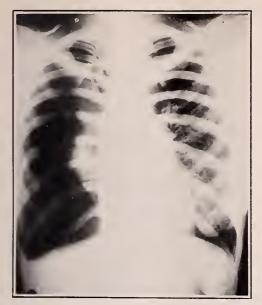


Fig. 13. Case VI, showing the effect of high pressure in freeing adhesions and closing the cavity. Note that there is no material displacement of the mediastinum by the high pressure.

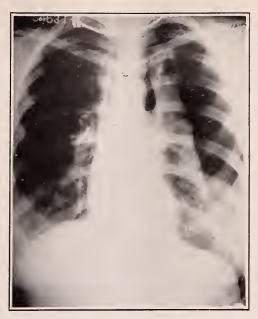


Fig. 15. Case VII, showing condition on Dec. 14, 1929, after pneumothorax had been established on the left side; note the unclosed cavity in upper portion of collapsed lung (a).

#### CAVITY CLOSURE BY BILATERAL ARTI-FICIAL PNEUMOTHORAX.

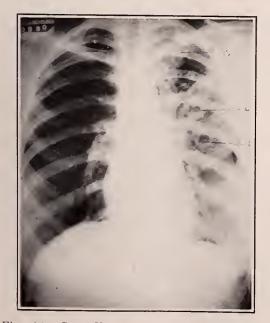


Fig. 14. Case VIII. Roentgenogram of April 25, 1929, showing cavities (a), (b) and (c), with exudative densities through upper left lung field. Right lung field free from abnormal shadow.

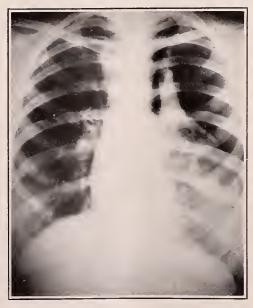


Fig. 16. Case VII, condition on March 10, 1930, with selective collapse of the upper lobe closing the cavity, and with the lower lobe expanded and functioning.

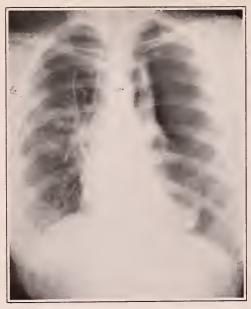


Fig. 17. Case VII, roentgenogram of Nov. 20, 1930, showing left lung collapsed, but with herniation of the mediastinum into right thorax (a), and definite areas of infiltration in the right lung field, (b).

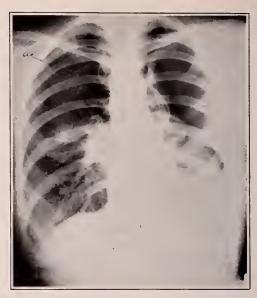


Fig. 20. Case VII, roentgenogram on March 23, 1931, showing selective collapse of the upper right lobe, classing the cavity, with pneumothorax still maintained on the left. Lung margin at (a) on light.

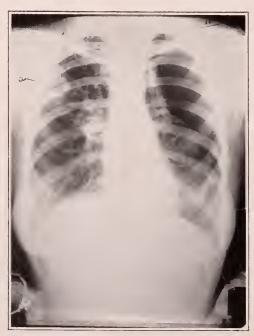


Fig. 18. Case VII, roentgenogram on April 22, 1931, showing distinct cavitation in the right lung (a), and satisfactory collapse still maintained on the left side.

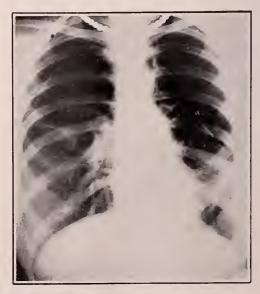


Fig. 20. Case VII, roentganogram on March 23, 1932, showing present condition of this ambulant patient, with bilateral pneumotherax, with selective collapse closing cavities in each upper lobe, and with lower lobe of each side functioning.

### CAVITY CLOSURE BY ARTIFICIAL PNEUMOTHORAX PLUS INTRA-PLEURAL PNEUMOLYSIS.

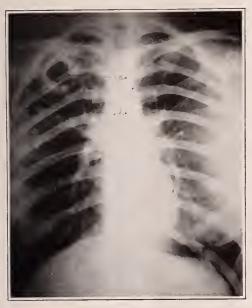


Fig. 21. Case VIII. Reentgenogram of July 29, 1927, showing exudative disease with one large cavity (a) and smaller cavities (b), in the upper right lobe. Left lung relatively free from disease.

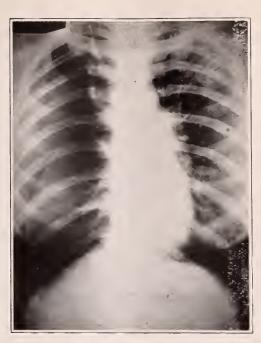


Fig. 23. Case VIII, showing better collapse of cavity on right side (a), and definite cavitation in upper left lung (b).

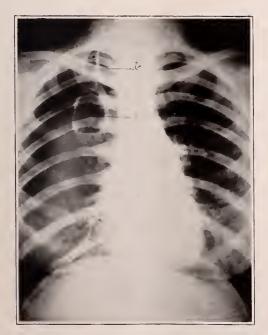


Fig. 22. Case VIII, showing pneumothorax on the right side, with incomplete closure of cavity (a), adhesion extending to apex (b).

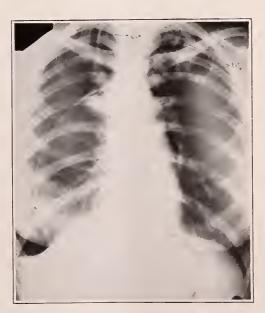


Fig. 24. Case VIII, after first stage of intrapleural pneumolysis. One band of adhesion to apex still present (a). Cavities at left apex (b).

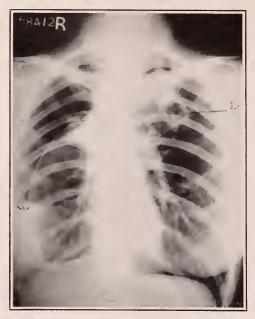


Fig. 25. Case VIII, after completion of pneumolysis for severing adhesions holding upper right lobe, and after beginning the pneumothorax on the left side. Upper right lobe cavity is finally entirely closed, there is a small amount of fluid in lower right pleural space (a). The cavity in the upper left lobe (b) is partly closed.



Fig. 27. Case IX. Roentgenogram of Jan. 13, 1928. Shows fairly extensive involvement of upper left lung field, with multiple small cavities (a), (b).

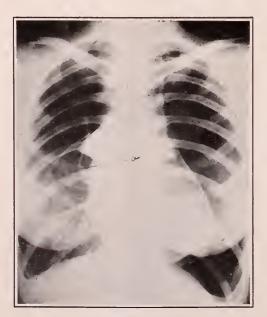


Fig. 26. Case VIII, roentgenegram of Jan. 26, 1931, showing degree of bilateral collapse carried by the ambulant patient. Cavities in each upper lobe are satisfactorily closed. At (a) is shown the border of the mobile mediastinum.

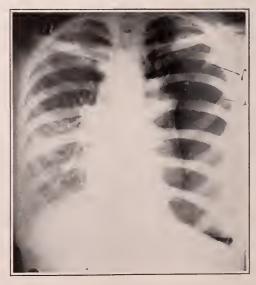


Fig. 28. Case IX, roentgenogram of July 11, 1928, showing extent of collapse. Fairly large cavity (a) is shown with incomplete collapse on account of adhesions (b).

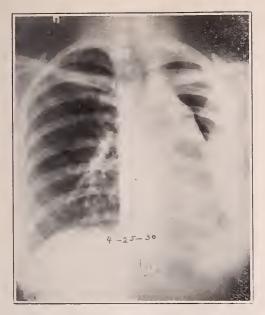


Fig. 29. Case IX, roentgenogram showing conditions after intrapleural pneumolysis had freed adhesions and allowed satisfactory collapse of upper lobe cavity.

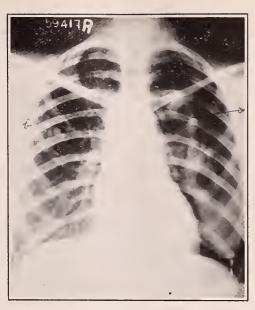


Fig. 31. Case X, showing incomplete collapse of left lung, with cavity not closed (a), on account of pleural adhesions. There is definite extension into the right lung (b).

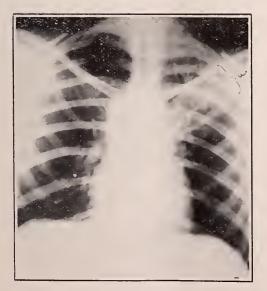


Fig. 30. Case X. Reentgenogram of February, 1930, showing large cavity in the upper left lobe (a), with surrounding infiltration.

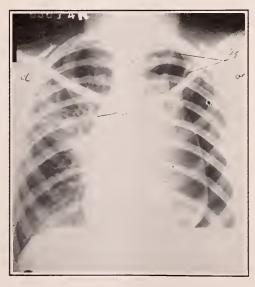


Fig. 32. Case X, rosntgenegram of June 15, 1931, showing incomplete closure of cavity on the left, as in Fig. 31 (a), with adhesions (b), and some mediastinal herniation (c). There has been further extension of the process on the right, with cavity formation now evident (d).

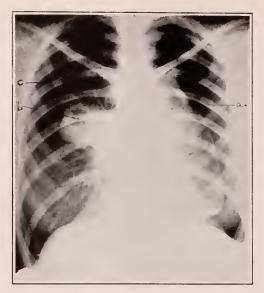


Fig. 33. Case X, showing conditions on Oct. 30, 1951, after intrapleural pneumolysis had freed the adhesions on the left, with much better closure of cavity (a). Pneumothorax has been instituted on the right, complete collapse of the cavity (b), being prevented, for the time, by a narrow band of adhesion (c).

#### CAVITY CLOSURE BY PHRENICECTOMY



Fig. 35. Case XI. Roentgenogram of March 6, 1930, showing large cavity in upper left lung field, under clavicle (c).

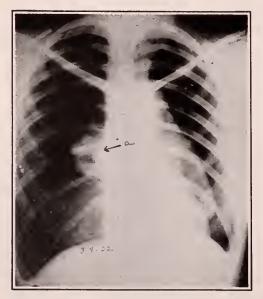


Fig. 34. Case X, showing conditions on March 4, 1932. Cavity has been closed on the left. The adhesion on the right has been freed by intraplcural pneumolysis, and this cavity has almost entirely closed (a). This illustration shows very graphically how little functioning lung is required to keep a patient in comfort. This patient can walk about and climb stairs with hardly perceptible increase in respiratory rate.

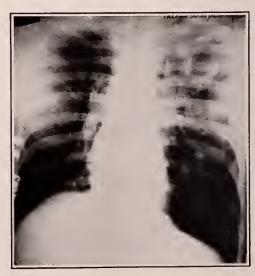


Fig. 36. Case XI. (April, 1930), shows attempt at closure of cavity by pneumothorax. This was not successful in closing cavity, as apex was held by adhesions. Lower lobe is collapsed.

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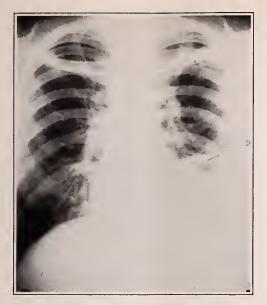


Fig. 37. Case XI, showing conditions on June 16, 1931, after phrenicectomy, which was done several months previously. Note the entire disappearance of the cavity. Position of left diaphragm with gas-outlined fundus of stomach at (a).

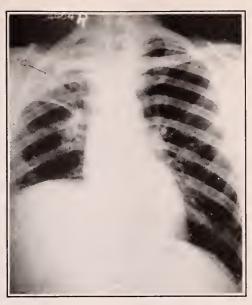


Fig. 39. Case XII, roentgenogram of Dec. 10, 1929, showing position of diaphragm after phrenicectomy on the right. Much of the exudative type of density has disappeared, cavity has decreased noticeably in size (c).

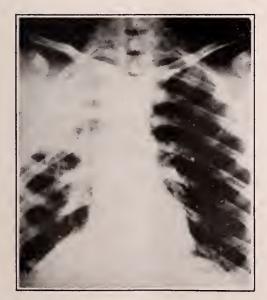


Fig. 38. Case XII. Condition on June 14, 1929, with extensive coalescing densities and cavitation in upper right lung, showing exudative lesions along heart border as low as diaphragm.



Fig. 43. Case XII, showing conditions in Oct., 1930, with disappearance of all densities in the basal area, closure of cavity in the upper lobe and healing of lesions around cavity by fibrosis. Diaphragm is even higher than it was in Fig. 39, probably due to increase in weight.

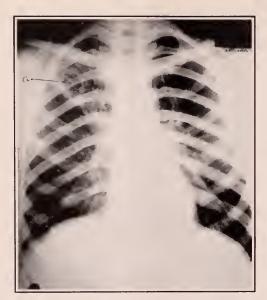


Fig. 41. Case XIII. Roentgenogram of October, 1929, showing involvement in upper right lobe, with cavity formation (a). Left lung fields free from significant densities.

## CAVITY CLOSURE BY EXTRAPLEURAL PNEUMOLYSIS.

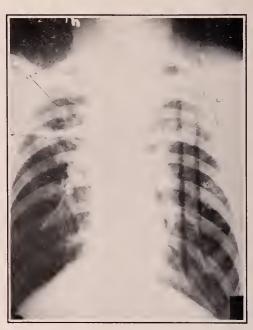


Fig. 43. Case XIV. Condition of lungs in March, 1931, with very large cavity in upper right lung field (a), with surrounding infiltration (b), and some exudative involvement in the upper left lobe (c).

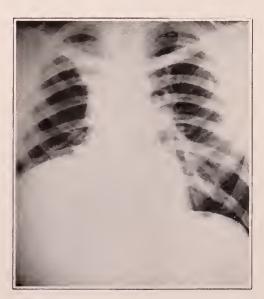


Fig. 42. Case XIII, showing conditions in October, 1931, with cavity healed, following phrenicectomy.

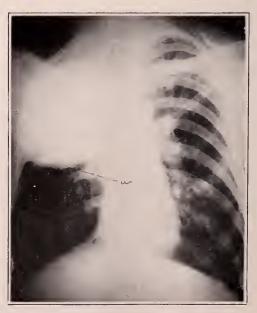


Fig. 44. Case XIV, after obliteration of cavity by extrapleural pneumolysis by paraffin filling. No e at (a) the tendency of the paraffin to sag.

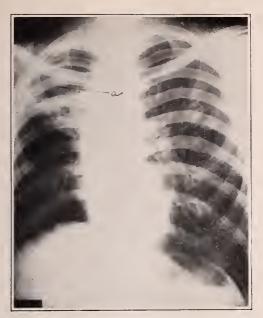


Fig. 45. Case XV. Roentgenogram of October, 1931. Very large cavity in upper right lobe, with infiltration density below it (a).

#### CAVITY CLOSURE BY THORACOPLASTY

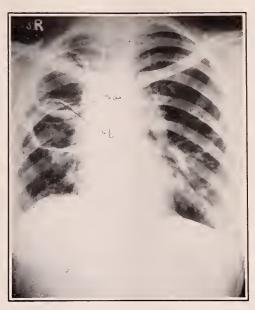


Fig. 47. Case XVI. Roentgenogram of June, 1930, showing very large double cavity (a), (b), occupying most of upper two thirds of right lung.

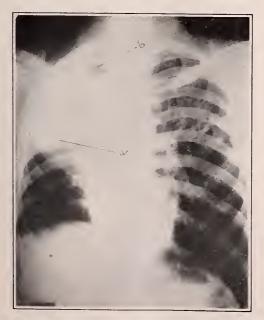


Fig. 46. Case XV, after extrapleural pneumolysis by paraffin filling (a). Paraffin has sagged down leaving area of incomplete closure at apex (b).

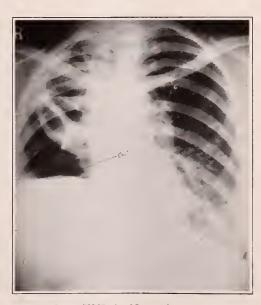


Fig. 48. Case XVI, in November, 1930, after unsuccessful attempt to collapse the cavities by pneumothorax, supplemented by phrenicectomy. There is some fluid in the pleural space, above which the elevated and paralyzed diaphragm can be seen (a).



Fig. 49. Case XVI, in June, 1931, after second stage of thoracoplasty. Immobility of mediastinum resulted in incomplete closure of cavity (a). This has since been closed by paraffin filling.

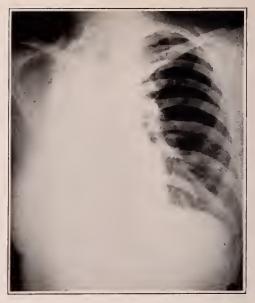


Fig. 51. Case XVII, after establishment of collapse of cavities by thoracoplasty.



Fig. 50. Case XVII. Roentgenogram at time diagnosis of tuberculosis was made in January, 1930. Extensive right sided involvement, with large multiple cavities (a), (b).



Fig. 52. Case XVIII. Roentgenogram taken November, 1930. Shows at lectasis of left lung, with cavitation in upper portion. Apparently little or no involvement on the right. Note displacement of heart into dense side of chest.

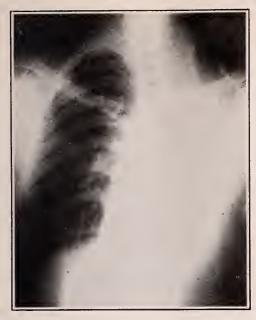


Fig. 53. Case XVIII, after thoracoplasty, obliterating the pleural space on the left and closing the upper lobe cavities.

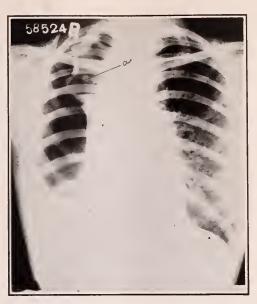


Fig. 55. Case XIX, after collapse by pneumothorax, which was not successful in closing the apical cavity (a). Fluid in pleural space (b).

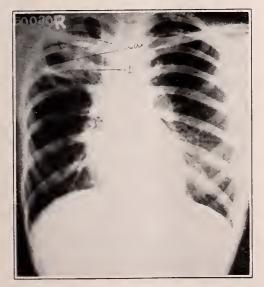


Fig. 54. Case XIX. Roentgenogram of March, 1929, showing large cavities in upper lobe of right side (a), with some surrounding exudative density (b).

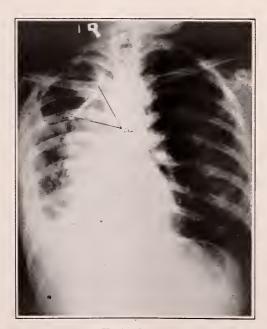


Fig. 56. Case XIX, in March, 1931, after lung had expanded. Cavity still present (a), larger than before. Some atelectasis of lung tissue (b), with some displacement of heart to the right.

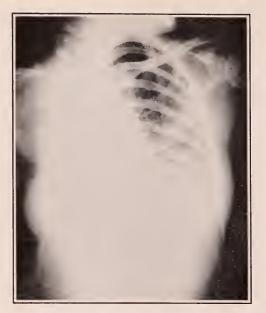


Fig. 57. Case XIX, in November, 1931, after thoracoplasty, showing pleural space obliterated and cavities closed.

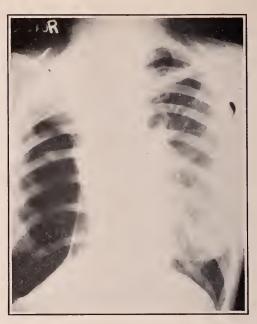


Fig. 59. Case XX, in September, 1930, showing attempt at closure of cavities by pneumothorax, and failure on account of adhesions.

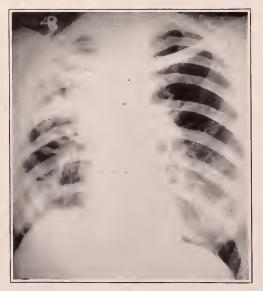


Fig. 58. Case XX. Roentgenogram in February, 1929, showing extensive cavitation and much surrounding exudative density through lung field on the right. Cavities at (a), (b) and (c).

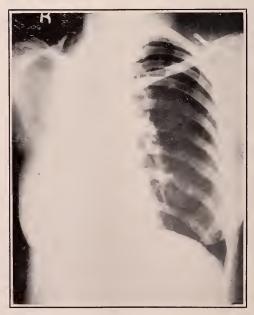


Fig. 60. Case XX, after complete collapse of lung and closure of cavities by thoracoplasty.

MAY, 1932

# STATE HEALTH DEPARTMENTS, THEIR HISTORY AND ACHIEVEMENTS

PLATT W. COVINGTON, M. D.

Western Representative, International Health Board of Rockefeller Foundation

(Read at the Eighth Annual Meeting of the New Mexico Public Health Association, Carlsbad, April 18-20, 1932).

#### HISTORY

In the Seventeenth and Eighteenth Centuries there were no permanent organizations in this country to promote public health. When epidemics of such proportions as to cause wide-spread alarm occurred, a committee would be appointed following a public meeting, consisting of several of the local medical practitioners, whose duty it would be to promulgate and enforce quarantine regulations, usually of the kind now referred to as "shot-gun quarantine."

In England, following a wide-spread epidemic of cholera in 1831, 1849, and 1854, a commission was appointed to investigate the situation. Largely as the result of the publicity given the findings of this committee, and the fear that such epidemics might continue to occur at frequent intervals, a law was enacted by parliament providing for the appointment of a general board of health and local boards of health to recommend measures to improve the public's health, and for the appointment of part-time health officers, selected from the practitioners of medicine, whose duty it would be to carry out, or enforce, the recommendations, of the local board of health. This law was enacted in 1849 and is referred to in this article inasmuch as early public health procedures in this country were largely copied from the English. In 1869, a Royal Sanitary Commission was appointed in England. Following its first report, a law was proposed and introduced in parliament, which, if passed, would have established a national health department. It was defeated, but prior to the introduction of this law, in 1849, a central board of health had been created.

At this date, we had not progressed as far as England in public health matters because of our scattered population and, therefore, less apparent need for such legislation. In 1850, a report was made, and widely published, of the sanitary conditions of Massachusetts—the first sanitary survey ever made in this country. In this remarkable study, aside from its historical interest, the suggestion was made that a state board of health be created. It also outlined the manner of its organization and its duties.

In France, at about this time, Pasteur was revolutionizing the world's medical knowledge, making it obvious to many thoughtful people that the common methods of combating epidemics were insufficient.

Louisiana, in 1855, was the first state in this country to establish by law a state board of health. It was primarily for the purpose of better enforcing the State's maritime regulations, in order to prevent epidemics of yellow fever. Fourteen years later, Massachusetts established a state board of health. This was just twenty years after it had been so strongly recommended by Samuel Shattuck, a layman, in his sanitary survey of that state. California was next, in 1870, just one year after Massachusetts. Virginia and Minnesota did so two years later, in 1872. New Jersey, North Carolina, Illinois and Mississippi, in 1877. South Carolina, Connecticut, and Rhode Island, in 1878. And so on; every few years, other states were added to those having a state board of health. New Mexico joined the others in 1919.

Instead of a state board of health, Connecticut, Maine, Massachusetts, New York, Ohio, and West Virginia, have a public health council which functions on the whole as an advisory board. The duties of this body in Connecticut are somewhat unusual in that the law creating it specifies three functions:

- (1) to establish a sanitary code for the state, (2) to report biennially to the governor regarding the activities of the state health department, and (3) to approve such appointments on the staff of the state health department as may be made by the governor from time to time.
- Three states—Idaho, Nebraska, and Oklahoma—do not have a state board of health or an advisory public health council, though one of them, Okklahoma, has a state health department, and the other two a state public

health bureau within the state welfare department. In the remaining thirty-four states, the state board of health is supervisory to the state health department. It also formulates the policies of the state health department and has certain legislative authority in making rules and regulations for the purpose of preventing the spread of communicable diseases.

In Alabama and South Carolina, the state board of health differs considerably from those in other states. In Alabama, the State Medical Society is the state board of health. This body elects, from its members, a state board of censors, consisting of ten members. The governor is also a member and ex-officio chairman of hte board. This body is the acting state board of health and selects the state health officer. The South Carolina Medical Society, together with the state's attorney general and the state's comptroller general, compose the state board of health. This association elects seven members who are appointed by the governor to constitute the executive committee, this committee corresponding, in the duties it performs, to the state board of health.

The early conception of the duties of the state board of health was that they should investigate the cause of diseases, giving advice as to the manner of their prevention, to the citizens of their state, and especially to the legislature. For a long period, many state boards of health continued to adhere very closely to this program, refusing to assume other responsibilities, doubtless due to the precedent established by Massachusetts.

Combating epidemics was considered the sole duty of these sanitary authorities. Scavenging, sewers, and ventilation, were the chief weapons of defense. They were invariably depended upon during that era to de stroy contagion. The theory of the spontaneous origin of the causative agents of disease through the decaying and fermentation of vegetable and animal matter, was then at the height of its popularity.

In the issue for January 22, 1921, of the Journal of the American Public Health Association, Chapin, the father of modern public health procedures in this country, stated,

Although there were some important truths in the generalizations of the early promoters of public health in this country, and although their projects for civic betterment saved many lives and did much for human comfort and convenience, there were several errors which have had an unfortunate influence on preventative medicine and still have today. One of these is that disease breeds in filth instead of being carried in filth. Another is that all kinds of dirt are dangerous, not merely the secretions and the excretions from the human body. A third unfortunate hypothesis is that infecticus diseases are usually air-borne.

In view of such theories at the time, it is not surprising that, in the efforts to prevent epidemics, mistakes were made. It must be recalled that the science of bacteriology had not then shed its light upon the subject. Small wonder it is, that even in this more enlightened age, health officers not unusually have to contend with individuals whose conception of public health procedures are still influenced by the archaic practices of the past, and that they should find individuals of this clars opposing modern public health practices. In fact, those of us engaged in public health work know that it is necessary, in order to put over our plans frequently to oppose the views of many othcrwise well-informed citizens, who continue to hold to the opinion that it is the duty of the health officer to abate nuisances, clear the streets, alleys, and residential yards of rubbish, placard the homes in which quarantinable diseases occur, and fumigate these houses after the diseases have disappeared. These persons overlooked the fact that our knowledge concerning the spread of disease from one individual to another has enormously increased during the past fifty years, and that research work in recent years has proved, beyond any shadow of a doubt, that such activities will have but little influence on a community's morbidity rate.

It is only within recent years that the brilliant discoveries of the causative agents of our more common diseases have materially altered public health procedures. The modern conception of disease prevention has been in practice for only about thirty years. During this time, attention has been directed more and more to the individual rather than to the community as a whole. Education has become an important part of its

program, and it is the education of the individual which is aimed at. All modern public health movements, like the one hookworm disease in the south by the Rockefeller Sanitary Commission, those against tuberculosis and veneral diseases, those for the prevention of infant mortality, immunization activities of state and local health departments, the periodical physical examination of well people who have passed middle life, and the physical examination of school and pre-school children, are directed toward the individual. They teach the right way of living, detect physical defects in their incipiency, and offer opportunities for their correction. Thus are health departments decreasing the amount of disease by combating epidemics, and by increasing the individual's resistance to dsiease.

# THE NEGLECTED FIELD OF PUBLIC HEALTH

Although the record in the saving of human lives cannot be duplicated by any other human endeavors in the world's history, there is much yet to be done. This will apply, to an equal degree, in our larger cities where modern health departments may be seen at their best, as well as in the rural districts where public health conditions remain deplorable, though the lives of those living in such districts are just as valuable and potentially of as much promise as those in the cities.

In 1900, the death rate from all causes, in the registration area of this country was 17.6 per thousand population. Twenty-seven years later, in the same area, it was 11.9 a decrease of 32.4 per cent. During the same period, in the cities of this area, the decrease was 37 per cent; whereas, in the rural part of this area, it was only 29 per cent.

In this comparison, no allowance has been made for the differences in the age, six, and racial distribution, of the population in the two areas, rural and urban. However, were the rates standardized, the contrast would be even more striking, as the population in the cities contains a larger element of immigrants and colored people, whose death rate is universally higher than that of the native stock, of which our rural population chiefly consists. Thus, it is seen that our country

districts, which heretofore have had a lower death rate than the cities because of certain inherent advantages, are rapidly losing their position, because of the superior public health administration in cities.

The protection of the health of the public is admitted and recognized, the world over, as a government function. Its cost, even in rural areas, when paid by not too small a group of population, is rarely excessive. Five-sixths of the counties in this country are entirely rural. About one per cent have no incorporated towns whatever. More than fifty per cent have no incorporated towns of more than 2,500 population. To provide public health administration approaching adequacy, in this large area is a duty of the government, and of all governmental units. The county, with possibly aid from the state health department and the federal health department, is best qualified to assume this responsibility. The experiences of many states have shown that the county is the most ideal unit for rural public health administration. The solution of the problem lies in the organization of efficient full-time county health departments, or county health units. When such becomes universal rather than the exception, as is now the case, we may expect a decline in the rural death rate to equal, if not to exceed, the decline in the urban death rate.

Full-time health departments were first established in our large cities. The states of North Carolina, Kentucky, and Washington, were the first to have a rural county place its public health work on a full-time basis. Jefferson county, Kentucky, did so in 1908.

On December 31, 1923, there were 230 rural counties maintaining a full-time health department. December 31, 1924, 279; for the same period in 1925, 299; 1926, 342; 1927, 412; 1928, 461; 1929, 491. Thus it is seen that the number increases from year to year. Once given a trial, it is exceptional for the full-time health departments to be discontinued. Of the states having the largest number, Ohio leads the list, with more than half of her counties maintaining a full-time rural health organization; Alabama and North Carolina occupying second

and third place. Assuming the same intelligent public health leadership as they have had in recent years, Alabama will probably be the first state in which each of its counties will have a full-time health department. The states making the most progress in organizing them are those in which they have been subsidized by the legislature and in which the state health department is showing the most aggressive and intelligent public-health leadership.

For the historical data referred to in this article, the writer is indebted to Bulletin 184 of the United States Public Health Service, entitled, "A Survey of State and Provincial Health Departments," and to "A Half Century in Public Health," by Ravenel.

#### PROPHYLACTIC AND EARLY TREAT-MENT OF SYPHILIS

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(Read before the Santa Fe County Medical Society)

#### PROPHYLACTIC TREATMENT

By prophylactic treatment I mean treatment undertaken after the time of exposure to infection and before infection is established. It is now a quarter of a century since Metchnikoff and Roux demonstrated on monkeys that the spirochete could be killed on the mucous surfaces by 33 per cent mercury ointment, up to 12 hours after implantation, and no chancre result from the exposure to infection. This knowledge was used to some extent and to good purpose during the war but now is seldom reflected in treatment. It can be applied either by furnishing to the public "packets" containing the ointment, with instructions for its use, or by arranging for treatment immediately after exposure. Either course has been opposed on the ground that these methods encourage vice both by making promiscuous intercourse less dangerous and by the assumption that irregular sex relations are bound to occur. The case for and against self-disinfection was debated by two distinguished specialists in the International Journal of Public Health'. Examples are given there both of the striking success of self-disinfection in the British army and of its failure under civilian conditions. It is

fair to add that prophylactic treatment as practised with success in the American army has been also used successfully in a public treatment center at Plymouth and perhaps elsewhere among civilians.

The bitterness of the original disagreement on this subject has passed with time and there is now a disposition to allow physicians and educators the right to preach continence or prophylaxis or both, according to the individual conscience. For my own part I have publicly urged, when I have had the opportunity, that any individual who finds that he or she has been exposed to any risk of infection, however' remote, should immediately consult a doctor for prophylactic treatment, even though the doctor must be wakened in the middle of the night.

The technic of prophylactic treatment is so well described in a 10-cent pamphlet published by the U. S. Public Health Service<sup>2</sup> that I will not take time to discuss it here.

In addition to prophylactic treatment to be applied, if possible, within an hour of exposure, and certainly within twelve hours, the physician may have recourse, if he wishes, between the twelfth and forty-eighth hour to "abortive" treatment with arsphenamine. On the whole I am not in favor of this cure. It is, in my judgment, likely to be accepted only by a syphilophobe who has exaggerated the probability of infection. But there may be exceptional cases in which it is justified.

The prophylatic treatment of congenital syphilis is one of the most hopeful developments of preventive medicine at the present time. It is contingent upon (1) medical control of pregnancy from an early stage, and (2) routine Wassermann or Kahn tests in every case of pregnancy. Both of these essential preliminaries can be best promoted by joint action of the medical profession and public health agencies. Both private physician and public health officer should be urging, on all possible occasions, the importance of early and continued prenatal care. If a blood test is made by all physicians a routine part of such prenatal care, it loses any possible moral significance. It is only when the test is made occasionally that it may prove a source of embarrassment to physician and patient alike. Moreover, it has been quite con-

clusively shown that under the latter condition a majority of the cases of maternal syphilis will be missed. Here are some figures given by Professor Coler<sup>3</sup> of Columbia which indicate the proportion of sero-positive cases which may be expected in a prenatal clinic where routine examinations are made:

11.2% The Johns Hopkins Hospital Clinic 6.2 " The Ann Arbor Hospital Clinic 6.0 " The Long Island College Hospital 13.1 " The Detroit Board of Health

The Royal Maternity Hospital Edinburgh Doctor Parker derives an average of 8.3 per cent from a study of thirty-seven clinics in nineteen American communities.

6.5 "

Laurent has studied the obstetric histories of 213 syphilitic women before and after treatment. Without treatment, only 26 per cent of the pregnancies gave live children who survived to three months. Only a few of them are free from syphilitic infection. After treatment, 92 per cent of the pregnancies resulted in live births surviving to three months of age and probably all healthy children at that time. Rorke states that at the Royal Free Hospital (London) there has not been one child stillborn or showing signs of congenital syphilis at birth during the last five years, where the mother has had treatment during pregnancy. A study of 200 cases of syphilitic pregnancies at the Los Angeles Maternity Clinic makes clear the importance of beginning treatment in the early months of pregnancy.

	No. of	Healthy	Syphilitic
Treatment Begun	Cases	Offspring	Offspring
Before 6 weeks	18	18	0
6 wk. to 3 mo.	45	44	1
3 mo. to 6 mo.	117	108	9
6 mo. to 9 mo.	20	12	. 8
	200	182	18

Halloran, who gives the above figures, en-dorses the treatment course of Fordyce and Rosen<sup>8</sup>, which he summarizes as follows:

"A course of combined treatment consisting of six to eight injections of neo-arsphenamine in doses from 0.15 to 0.45 gm. at weekly intervals, and mercuric salicylate or mercuric chloride 1 grain once a week for 10 or 12 injections, the treatment being continued interruptedly throughout the entire period of pregnancy."

Most writers merely state, in regard to

therapy of the pregnant woman, that she is a very good therapeutic risk.

#### EARLY TREATMENT

This brings me to routine early treatment. First, let me emphasize that the earliness is an important element in the success of treatment. The best illustration I have found of this is a paper by Louis Chargin and Abraham Stone who report on the treatment of 444 cases. Their standards of apparent cure are reasonably high, including a follow-up period of at least eighteen months, with repeated Wassermanns during this period. It is of considerable public health significance that only thirty-eight of these patients came for treatment in the sero-negative stage. Of these thirty-eight no less than 90 per cent are classed as cures, whereas, for the total of 444 cases, only 60 per cent are so classed. As the authors say, the golden opportunity in the treatment of syphilis lies during the seronegative period. This golden opportunity is also lost by the physician who waits for a positive Wassermann before beginning treatment. The State of Maryland is now providing outfits for the collection of serum to be examined by darkfield illumination in the state laboratories. New Mexico will follow suit as soon as the means to purchase these outfits can be discovered.

In regard to the technic of early treatment, there is pretty general agreement on the choice of drugs but intense disagreement as to the method of using them. The more treatment is piled on, the more likely is the spirochete to be killed, but also the more liable are we to poison the patient in the process. It was for this reason that the older syphilologists invented the rest period of one month after the first course and two months after the second and subsequent courses of treatment. Some excellent authorities still believe in this system with perhaps a little overlapping of mercury treatment into the rest Harrison<sup>10</sup> insists that concurrent treatment with arsenic and bismuth is necessary to achieve a cure. He points out that in his clinic 3,000 early cases of syphilis have been treated on this plan, with only one clinically manifest neuro-recurrence. When syphilis was treated by arsenic alone, neuro-recurrence was common.

"There seems," he says, "to be a sufficient reason for this in the fact that salvarsan abruptly ends the interaction between skin and parasite, and so the development of a protective immunity, but may fail to destroy the spirochetes in the central nervous system." He even goes so far as to say, "If my views are right, those who are now treating their early cases on the plan of alternating courses of arsenobenzene with courses of mercury or bismuth are laying up for their patients a heritage of neuro-syphilis." The challenge is taken up by Burke". Neurorecurrence, he says, is evidence of inadequate treatment. His own experience with the alternating continuous treatment shows that it does not occur when treatment is adequate. The advantage of the alternating plan is, of course, that less strain is put on the eliminatory organs and so complications may be expected to be fewer. Chargin and Stone found that the interrupted plan was as successful as the continuous plan and that their best results were obtained by intensive treatment. On the other hand, the U.S. Public Health Service pamphlet quoted above sides with the continuous method. The matter cannot be considered as settled. But one conclusion plainly emerges from the controversy, and that is the importance of adequate treatment. The following table by Moore is eloquent enough:

Eight doses, or less, of arsphenamine

and have remained negative.

terim mercury.......37% cured Three courses of arsphenamine with in-

#### REFERENCES

Self-Disinfection in the Campaign Against Venereal Diseases.

Reid, Sir G. Archdall — The Case For May, Otto — The Case Against International Journal of Public Health 2:591; 1921.

- Moore, J. E. et al. The Management of Syphilis in General Practice. Reprint No. 13 from Venereal Disease Information. Washington; Government Printing Office, 1929. Price 12 cents.
- 3. Coler, E. S. Can Congenital Syphilis be Pre-

- vented? Reprint No. 21 from Venereal Disease Information, Washington; Government Printing Office, 1930. Price 5 cents.
- Parker, Valeria H. Prenatal Clinics and the Prevention of Congenital Syphilis. Journal of Social Hygiene, 15:70-80, Feb., 1929.
- Laurent, Charles. Prophylaxis of Hereditary Syphilis. Urological and Cutaneous Rev. 33:242; 1929.
- Rorke, M. The Management of Pregnant Syphilitic Women Before and After Delivery. J. Roy. San. Inst. 50:295; 1929.
- Halloran, C. H. Syphilis and Pregnancy. Am. J. of Syphilis, 14:222; 1930.
- 8. Fordyce, J. A.; and Rosen, I. Treatment of Antenatal and Congenital Syphilis. Arch. Dermat. and Syph., 5:1; 1922.
- 9 Chargin, L.; and Stone, A. Early Syphilis. Arch. Dermat. and Syph., 19:750; 1929.
- Harrison, L. W. The Modern Treatment of Syphilis. Practitioner, 126;193; 1931.
- 11. Burke, E. T. The Adequate Treatment of Syphilis and a New Method for Evaluating Therapy. Am. J. of Syphilis, 15:155; 1931.

-The Adequate Treatment of Syphilis, Lancet, 1:1127; 1931.

#### PUBLIC HEALTH NOTES

J. ROSSLYN EARP, DR. P. H. Director New Mexico Bureau of Public Health

#### **KIDNAPERS**

"There can be no difference between poor and wealthy, noble and humble, old and young, in feeling for the lost child." So wrote Hideyo Noguchi and the letter is quoted in Gustav Eckstein's brilliant biography. The truth of what he wrote is evidenced by the nation-wide sympathy shown recently to the parents of the Lindbergh baby. But Noguchi was writing to a friend in Japan whose loss was due, not to the depravity of human greed, but rather to the imperturbable contumacy of the hosts of death.

It is easy to understand that we should be outraged by the activities of a human kidnaper; that our combative instincts should be aroused, our vigilance redoubled. What is less easy for me, at least, to grasp is the public apathy which allows the continuous depredations of such villians as syphilis and diphtheria—wretches that have been finger-printed and photographed, whom we could take tomorrow if we would.

Fourteen hundred and ninety-three babies

were stolen last year in New Mexico before they were a year old. Already, in the first two months of this year, sixteen children, under 12, have been taken by diphtheria alone. Nothing is more certain than that diphtheria can be stamped out. But this cannot be done by public health officials alone. It has been shown that the immunization of the pre-school children is far more important than the immunization of older children, in the control of diphtheria incidence. Apparently this is because mild (unrecognized) and especially nasal diphtheria occurs most frequently among these youngsters under 5. Health officers can urge upon the public the urgent importance of the use of toxoid: it is the family doctor who sees that the toxoid is given. Without his aid we shall continue to lose children who might have been securely guarded.

## THE AMERICAN PUBLIC HEALTH ASSOCIATION

One wonders how, in these days, any practitioner of medicine can get along without the American Journal of Public Health. Take the subject of diphtheria for example. Articles of the greatest practical value on immunization with toxoid have appeared in each of the first three numbers of the current volume. It is generally agreed that the future of medical practice will be more and more in the field of preventive medicine. What better way of keeping abreast of the times than to read regularly the official public health journal? The Bureau of Health will always be glad to lend one of the copies which come to various members of its staff. But why not join the Association? For five dollars a doctor may have all the privileges of membership and a subscription to the journal thrown in.

(1). Gcdfrey, E. S., Jr., M. D. Study in the Epidemiology of Diphtheria in Relation to the Active Immunization of Certain Age Groups. Am. J. of Pub. Health, 22:237 (March) 1932.

#### ARIZONA STATE MEDICAL ASSOCIATION

Forty First Annual Meetting Globe, Ariz. April 21 to 23, 1932

#### SCIENTIFIC SESSIONS

The meeting was called to order by the President, Dr. Harry Reese, of Yuma.

Rev. Gordon Chapman gave the following invocation:

"Almighty God, our Heavenly Father, we thank Thee that we are privileged to serve with Thee in the answering of human need. We thank Thee for those consecrated lives that co-operate with Thee in alleviating human suffering and the relief of pain and distress. We thank Thee for the fellowship this occasion offers for sharing of achievements. We earnestly pray that Thou wilt place within us a passion for the truth that will enlighten our intellects, a nobility of ideals that will kindle our sympathies, and a love for service that will enhance our effectiveness.

"We invoke Thy blessing upon the deliberations of this gathering, to bless, to illumine our minds, to renew our zeal for service. May Thy spirit be evidenced in our efforts to know and to understand. To that end, our Father, we ask for the guidance of Thy spirit of truth to direct our meditations and conversation. In the spirit of our Master we pray it. Amen."

In the absence of Mayor Keegan, Judge C. C. Faires gave the Address of Welcome, following which Dr. John Flinn gave the response of the Medical Association.

Dr. Reese introduced the President-elect, Dr. Gunter, who then addressed the Association.

The first paper of the scientific program was given by Dr. Berger of Phoenix, whose subject was The Arizona State Board of Medical Examiners and the Medical Profession." Dr. R. J. Stroud of Tempe opened the discussion, and was followed by Drs. Wilkinson and H. P. Mills, both of Phoenix.

Dr. Harlan Shcemaker of Los Angeles read the second paper. His subject was "Statistical Report on Gall Bladder Operations at the Los Angeles County Hospital During the Past Six Years." In the absence of Dr. Thomas, Dr. Bacon of Globe opened the discussion. Dr. Yount, Dr. Brayton and Dr. Adamson contributed to the discussion, which was then closed by Dr. Shoemaker.

The Board of Councillors held their meeting at one o'clock Thursday after luncheon at the Dominion Hotel.

At two o'clock sessions were resumed. Dr. Yount presented a paper on "Rupture of the Pregnant Uterus in Trial Labor—Previous Cesarean Scar Intact, Report of a Case." In the absence of Dr. Kirmse, Dr. Swackhamer opened the discussion, and was followed by Dr. Irvin, of Miami, Dr. Wilkinson and Dr. Sharp of Phoenix. Dr. Yount then closed the discussion of his paper.

Dr. H. P. Mills of Phoenix read the second paper of the afternoon. "The Neutrophile Leukocyte" was his subject. Dr. Greer was not present and Dr. Gunter asked Dr. Robert Flinn to discuss the paper. Dr. John Flinn spoke and Dr. Mills closed the discussion.

The paper, "Light and Air Therapy," by Drs. John and Robert Flinn, was presented by Dr. Robert Flinn, and comments were made by Dr. John (Continued on page 224)

# Southwestern Medicine

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Volume XVI	May, 1932	No. 5
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# PROBLEMS FACING THE ARIZONA STATE MEDICAL ASSOCIATION

Never since the turbulent days of forty years ago has the Arizona State Medical Association faced more serious problems than we are confronted with today. These problems are public and political in nature and, while the above statement is true, it is also true that we were never more favorably situated for the wise and correct solution of these problems.

Arizona is being over-run by a horde of non-medical practitioners of the cultist type, and they are going to demand legislative recognition unless the medical profession bestirs itself. Furthermore, under our present medical practice act, to which the attorney general of the state has given an interpretation never intended by the act, we are being inundated by a tidal wave of medical practitioners, far beyond the needs of our population. This inundation can only be checked by a radical revision of our medical practice act. The medical profession of the state is well united on the proposal that the Basic Science Act will offset both of these evils.

There are problems associated with the Arizona Industrial Commission's work which are vital to the medical profession. These problems should be solved in a statesmanlike manner.

We have at the head of the organization for the coming year two men well qualified to serve the Association in these critical months. Dr. Clarence Gunter, of Globe, who assumed the presidency a few weeks ago, is thoroughly familiar with the necessary tactics of political and legislative contacts. He is a man of great influence in the dominant party of this state, and should lead us successfully in whatever legislative program is decided upon. The Association is fortunate in having a man of his wide experience in the presidency at this time.

Dr. Nelson C. Bledsoe, of Tucson, the president-elect, is also a well known and influential figure in the medical life of the state. For the past twenty-five years he has been located in Bisbee, as chief surgeon of the Calumet & Arizona hospital. In fraternal circles he is one of the best known citizens of the state.

We could not have two men who will be listened to with more attention by the thinking citizens of Arizona.

# ARIZONA STATE MEDICAL ASSOCIATION

(Continued from page 223)

Flinn following his presentation. Dr. Wilkinson, Dr. Holbrook and Dr. Reese also discussed it before Dr. Robert Flinn closed.

Dr. Adamson's paper, "Spinal Anesthesia," was discussed by Drs. Shoemaker, Bacon, Kennedy of Globe, Stevenson of San Diego, and Yount, before the discussion was closed.

The House of Delegates met at nine o'clock, Friday mornnig, and the Scientific Sessions were continued at ten o'clock. An announcement was made by Dr. Orville Harry Brown of Phoenix that he has been compiling statistics about all doctors who have made their homes in Arizona, and that he will

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appreciate the cooperation of the members of the Association in the continuation of this work.

Dr. N. C. Bledsoe of Tucson gave the first paper of the day, on "Treatment of Burns." Dr. Adamson, Dr. Wilson of Willcox, Dr. C. E. Irvin, of Miami, and George Goodrich, of Phoenix presented their contributions and Dr. Bledsoe closed the discussion.

"Immunization Against Diphtheria—Toxoid Compared with Toxin-antitoxin" was the subject presented by Dr. M. S. Gaede of Jerome. Dr. Barley discussed it, and Dr. Gaede closed without further comment.

Dr. E. A. Gatterdam of Phoenix read a paper on "House Dust as an Etiological Factor in Asthma." Dr. S. H. Watson of Tucson opened the discussion and Dr. O. H. Brown also participated, after which Dr. Gatterdam closed the discussion.

On Friday afternoon, April 22, Dr. George Roy Stevenson, of San Diego, read the first paper on "Cancer." Dr. Dudley Smith of San Francisco followed, reading a paper on "Cancer of the Rectum," and the two papers were discussed together. Dr. Goodrich, Dr. O. H. Brown, both of Phoenix, and Dr. F. D. Vickers of Deming, New Mexico, were those who took part.

Mr. Bert Clingan of Phoenix read a paper on "Industrial Surgery and the Compensation Law." It was discussed by Dr. Patterson, Phoenix, Dr. Bledsoe and Dr. Kennedy of Globe.

Dr. David M. Davis then presented his paper on "Urethral Methods for the Relief of Prostatic Obstructions—History and Present Status." Dr. C. E. Utzinger of Ray opened the discussion which Dr. Purcell of Phoenix, Dr. W. G. Schultz, of Tucson, and Dr. Harbridge continued. Dr. Davis then closed.

On Saturday morning, April 23, the House of Delegates met at nine o'clock, preceded by a short meeting of the Council.

The Scientific Session was taken up at ten o'clock wi'h a raper by Dr. Paul Holbrook of Tucson, "Heart Murmurs". In the absence of Dr. Fahlen, the discussion was thrown open. Dr. Howell Randolph and Dr. Reese and Dr. Baldwin of Phoenix took part in the disucssion, after which Dr. Holbrook closed.

"Treatment of Rectal Diseases by the Injection Method" was the subject of a paper by Dr. N. J. Kilbourne of Los Angeles. Dr. Kennedy of Globe opened the discussion and Dr. Holt also took part before Dr. Kilbourne closed.

Dr. Victor Randolph of Phoenix presented the subject "Intra-pleural Pneumolysis," which was discussed by Dr. Holbrook, and closed by Dr. Randolph.

The morning session was adjourned.

Dr. Howell Randolph of Phoenix gave the first paper of the afternoon session. Dr. Victor Randolph discussed it in the absence of Dr. W. C. Davis, and Dr. Randolph closed.

Dr. Gaskins presented the subject, "Advances in the Diagnosis and Treatment of Sinusitis." Dr. Irvin and Dr. Bacon discussed it, and Dr. Gaskins closed the discussion.

The 1932 session of the State Medical Association was adjourned, and a meeting of the House of Delegates terminated the executive meetings.

#### COUNCIL MEETINGS

The annual meeting of the Council of the Arizona State Medical Association was held at 1 p. m., April 21, 1932. The meeting was called to order by the President, Dr. Clarence Gunter. The



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following members were present: Drs. Manning, Gunter, Yount, Harbridge, Reese and Bacon.

Minutes of the 1931 meeting were read and approved.

The report of the Treasurer was read by Dr. C. E. Yount. Dr. Reese moved that Paragraph 7 of the recommendations of the Committee on Auditing be amended to read "fifty dollars" instead of "twenty-five dollars." Dr. Harbridge seconded the motion and it was carried. Dr. Reese then moved that the report of the Auditing Committee with the amendment be accepted as it sands. Dr. Manning seconded the motion and it was car-

On Saturday, April 23, the Council held a short Those present were Drs. Harbridge, Gunter, Reese and Manning.

The following resolution was presented:

"Whereas it appears that an impression exists in the minds of many members of this Association that certain members have been instrumental in encouraging certain attorneys to file suit for malpractice against our members whether purposely or unconsciously, thereby causing the Association increased expenses and trouble; now therefore, be it resolved, that the Medical Defense Committee shall have authority to require attendance at its meetings of all concerned in future suits for the purpose of determining the ethical attitude toward the case in question."

It was moved by Dr. Manning that the resolution be adopted. Dr. Reese seconded the motion and it was carried.

#### THE HOUSE OF DELEGATES

The annual meeting of the House of Delegates of the Arizona State Medical Association convened on April 22, 1932, with the President, Dr. Gunter, presiding.

Roll Call showed the following members present: Drs. Adamson and Wilson, Cochise County; Dr. Manning, Coconino County; Drs. Swackhamer and Bacon, Gila County; Dr. Squibb, Graham County; Drs. Harbridge, McLoone, O. H. Brown, Geodrich, Greer, Carson, Truman and Purcell, Maricopa County; Dr. Brazee, Mojave County; Drs. John Flinn and Gaede, Yavapai County; and Dr. Reese. Yuma County.

The Secretary read the minutes of the 1931 meet ing which were approved as read.

A resume of the Treasurer's Report was given by Dr. John Flinn in the absence of Dr. Yount. Dr. Bacon was called upon to discuss the recommendation of the Audiling Committee regarding the limitation of the amount of money that the Medical Defense Committee shall expend on any one case. He stated that a precedent is being set and that it is important that the State Association control it. Law suits between members in good standing hazard the whole matter of Medical Defense. Dr. Bacon then moved that the amount that may be expended on any one given case be set at \$2,000,

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but that on unanimous vote of the Committee the amount may be exceeded at the discretion of the Medical Defense Committee. In the discussion which followed, Dr. Harbridge stated that California Doctors had required that 30 hours of "materia medica" be studied by osteopaths in the hope that their work would be disqualifed. Instead, the osteopaths took the required work with the result that they are placed on a status equal with the doctors.

The Treasurer's report was adopted.

Dr. Bacon, as Chairman of the Committee for Medical Defense read a leter from the McKesson, Sloane and Scott Law Firm, which is incorporated elsewhere in this report. He stated that Mr. Holton who served the Medical Association efficiently for many years has removed to California.

Dr. Gunter appointed Drs. Flinn, Greer, and Bacon to serve on the Necrology Committee.

Dr. Gunter suggested that it would be a good idea for the Association to get in touch with the Fort Wayne Insurance Company regarding the Schupp case. He said that Dr. Purcell is the principal witness for the defense.

The meeting was adjourned.

The House of Delegates was called to order by the President for a continuation of their session on Saturday, April 23, at nine o'clock, with the following representatives present: Dr. Wilson, Cochise County; Dr. Manning, Coconino County; Dr. Squibb, Graham County; Drs. Thoeny, Craig, Patterson, Harbridge and Howell Randolph, Maricopa Caunty; Dr. Brazee, Mojave County; Drs. Harper, Whiteman, Swackhamer, Bacon and Gunter, Gila County; Dr. Holbrook, Pima County, and Dr. Reese, Yuma County.

The Secretary's Report was read. It was moved by Dr. Bacon and seconded by Dr. Randolph that it be accepted. The motion was carried. Dr. Harbridge then spoke of the problems facing medical men in the fact that the Shoulder Plan of Hospital Construction provides for the expenditure of \$550,000,000 in the establishing of clinics. He said, "It looks very unfavorable for the doctors. In Washington a right thinking man has a great deal of trouble to carry on his profession. The level of medical practice has been lowered. Instead of benefiting the public it is a matter of shunting patients around from one Doctor to another."

Dr. Thoeny presented a resume of the Basic Science Law, stating that the difference between the new draft of it and the one presented last year is that no cult is mentioned by name. In the discussion which followed Drs. Randolph and Gunter participated. Dr. Gunter said that he would appoint a committee to work in conjunction with the Public Welfare Committee and will ask some men or will himself go over the state and make contacts.

The election of officers resulted in the choice of the following for the ensuing year:

President-Elect, Dr. N. C. Bledsoe, of Tucson.



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Vice-President, Dr. C. W. Swackhamer, Superior, Arizona.

Treasurer, Dr. C. E. Yount, Prescott.

Secretary, Dr. D. F. Harbridge, Phoenix.

Councillor of Central District, Dr. Victor Randolph, Phoenix.

Chairman of Medical Defense Committee, Dr. John E. Bacon, Miami.

National Legislation Representative, Dr. R. J. Stroud, Tempe.

Delegate to the American Medical Association, Dr. Paul Holbrook, Tucson. Alternate, Dr. Wilson, Willcox.

Welfare Committee, Drs. W. Warner Watkins, and George Truman to serve with Dr. John E. Bacon, Chairman.

Associate Editor for Southwestern Medicine, Dr. O. H. Brown of Phoenix.

Dr. Holbrook, on behalf of the members of the Pima County Medical Society, extended an invitation to the Association to meet in Tucson in 1933.

Dr. Reese, on behalf of the Yuma County Medical Society and the mayor of Yuma, extended an invitation to the Association to meet in Yuma.

A vote was taken, which favored Tucson, and it was moved by Dr. Reese and seconded by Dr. Swackhamer that it be made unanimous in favor of meeting in Tucson. The motion was carried.

Dr. Manning moved and Dr. Holbrook seconded the motion that the Association go on record as expressing their deep appreciation of the courtesies shown by the Gila County Medical Society in providing for the entertainment of the members of the State Society during the days of the Convention. The motion was carried.

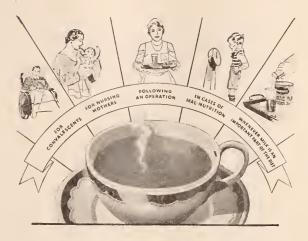
The names of Drs. Ellis and Barlow were submitted in the Necrology Committee Report.

The meeting was adjourned.

#### SECRETARY'S ANNUAL REPORT

The usual routine business of the office has been carried on. A large amount of correspondence passes through the office. Membership records, correspondence with the American Medical Association relative to many matters of interest to organized medicine.

In November, 1931, the Secretary attended the State Secretaries meeting, Chicago, at the A. M. A. building. The proceedings are being published at the present time in the Bulletin. These contributions should command careful consideration by each physician interested in the future welfare of organized medicine. Three outstanding presentations, concerned the question of medical and hospital service for veterans. So called medical clinics or groups especially those fostered directly or indirectly by lay persons. The danger of undermining influence of too many medical organizations. The dominant community medical influence should be in the hands of the local county society, as it is the unit on which the A. M. A. is builded. The parent association is



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D. F. HARBRIDGE. Secy. Ariz. State Med. Assoc.

#### REPORT OF THE COMMITTEE ON MEDICAL DEFENSE

The committee on Medical Defense has taken official cognizance of seven separate cases during the past year.

One case Pavell vs. Sweek went to trial resulting in a "hung jury". Total cost \$758.60.

Carlson vs. Hicks case non-suited. The Swackhamer case was non-suited-Ft. Wavne Co. case. The Shupe case (Ft. Wayne) verdict of \$5,000 for the plaintiff. Tuthill case (Ft. Wayne) is to be set for trial. Tuckett vs. Bonnell and Purcell are only threatened cases and have not actually been entered.

The old application blanks being inadequate and of such inferior material for purposes of future references new blanks have been prepared.

The financial status of the Defense Fund is as follows:

Balance in Savings Bank,

April 22, 1931 .....\$4080.00 Interest and dividends...... 581.86 Dues from 285 members pro rata 1710.00

\$ 6,372.54

EXPENSES		•
Medical Defense Legal	722.40	
Taylor Printing Co	27.50	
Tucker Morgan Co	66.00	
Rent Safety Deposit Box	3.00	815.90

Balance available \$5,556.64 

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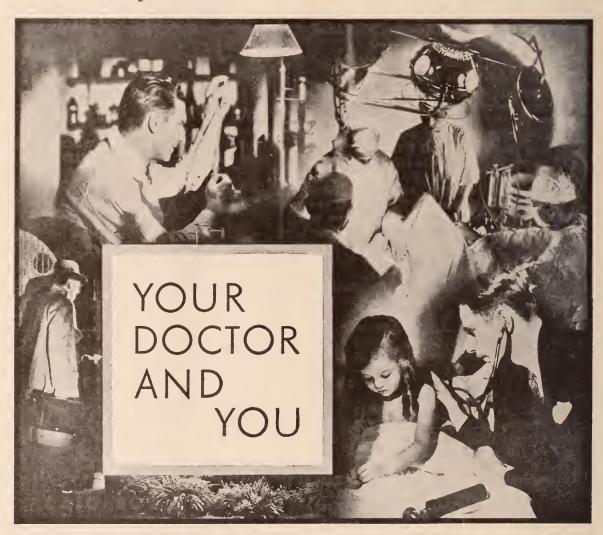
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# SUTHWESTERN MEDICINE

(REGISTERED U. S. PATENT OFFICE)

Vol. XVI.

JUNE, 1932

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OF THE

NEW MEXICO MEDICAL SOCIETY
ARIZONA STATE MEDICAL ASSOCIATION
EL PASO COUNTY (TEXAS) MEDICAL SOCIETY
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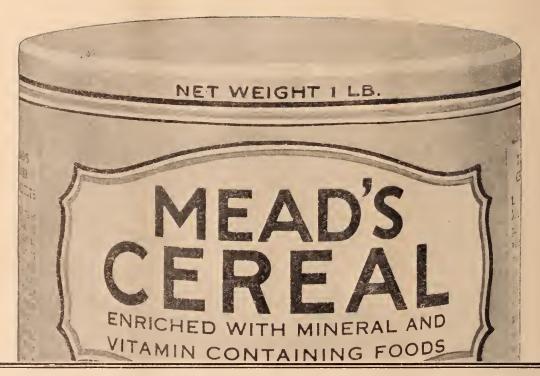
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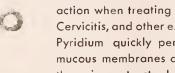


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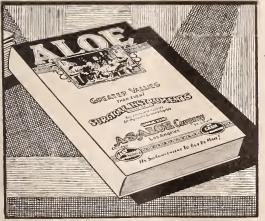
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Vol. XVI.

JUNE, 1932

No. 6

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Act of October 3, 1917.

#### PRESIDENT'S ADDRESS

CLARENCE GUNTER, M. D. Globe, Arizona

(Address of the President before the Arizona State Medical Association, at its Forty-first Annual Meeting, held in Globe, Ariz., April 21-23, 1932)

A signal honor has been bestowed upon me by you, my fellow members of the Arizona State Medical Association, and I assure you it is an honor duly appreciated and higher than I ever had ambition to hope for. It is, indeed, an honor to have lived for thirty-one years in Arizona, to have been associated in that time with so many men of such high standing, to have made so many friends among you, and to have retained the friendship of so many of you, that you have presented me with your presidency for the coming year. At the end of my year of office as your president, it is my hope that I shall still maintain your friendship, and that you will feel that your trust in me has not been misplaced and that some benefit to the medical profession of Arizona will have accrued during that time.

As to the membership of the Arizona State Medical Association and its high standing, no words of praise are needed on my part. No profession demands so much of its members as the medical profession, and none other gives back so little in return. Except for that rare satisfaction which we all inherently have in doing a thing well and in knowing of the much good that we do, of which the world is ignorant, there is small remuneration. In these times of depression and positive distress and privation throughout the state and nation, there is no class of citizens who are more burdened than is the medical profession. And we of Arizona, in addition to the national depression, are more particularly distressed as the principal industry of our state is practically annihilated, the industry which has paid 40 per cent of the taxes of the state and upon which 50 per cent of the citizens of the state are more or less dependent.

But Arizona is set apart from all others by nature's especial favor, and, though we are suffering a depression, there is no withdrawal of nature's blessings, no disaster reducing or impairing our vast potential wealth. I refer to the wonderful climate. scenery, and health-giving sunshine which are ours. Arizona is the natural playground of the Southwest, and a year-round resort for pleasure and health. To take advantage of these wonderful resources for the good of our state becomes a part of the duty of the Arizona State Medical Association. aroused citizenship should frankly challenge the idea that Arizona will be bankrupt following the loss of our copper industry, and that our present suffering is necessary and inevitable, and will be continuous with that of the nation.

It, therefore, behooves us to bring Arizona's attractive resources to the attention of a vast number of people in the United States who are seeking a place to enjoy the latter years of their life in tranquility, with a comfortable sense of security. There are thousands of people in the North, Middle West and in the cold Eastern states who have a competence and are seeking such a place to spend their declining years.

people are being advised to go to Florida, Georgia, South Carolina, North Carolina, California, and even New Mexico, by many family physicians. They know nothing of the beauties of Arizona, only that Arizona is very lax in regard to the practice therein of various cults and faddists. As a matter of fact, no state can boast of such a high standing medical profession as we have, but we are tarred with the brush of the cults.

Another problem which faces the profession is the effort being made by certain insurance companies to lower the standard of the present fee schedule of the Arizona Industrial Commission. While this does not affect certain classes of the medical profession, it does affect the largest proportion of them. This fee schedule was drawn up by a committee of yours at the time of the inauguration of the compensation law in Arizona; it represents the composite opinion of the committee, and was approved and put into effect by the first Industrial Commission and has been continued practically without change since its adoption. This schedule will not be changed by the Industrial Commission if we of the Arizona medical profession, each and every one of us, make every effort at all times to be eminently fair and just in our various dealings with the insurance companies, the Industrial Commission, and the injured patients, and if we condemn without recourse any member of our profession who stoops to make a dishonest charge, and, when such a dishonest transaction is exposed, we stand behind the Industrial Commission and thereby maintain the honesty and integrity of our profession.

While on the subject of the Industrial Commission, I call to your attention the agitation for the extension of industrial compensation into the field of occupational discase. I quote from a recent report of the Industrial Commission of South Dakota: "The original idea of the workmen's compensation law was that of helping the injured worker to bridge over his troubles until he was again able to resume his ordinary labor, but by actions of legislators, courts and com-

missions, it is beginning to approach that of a general plan of health and accident insurance." I think this matter should be discussed and a stand taken in accordance with the opinion of the Arizona medical profession. It is, no doubt, an entering wedge in the formation of future, and vastly more extensive, systems of insurance, comparable to the European systems, to which physicians and dentists most strenuously object. In these systems there is no choice of physicians, professional confidence is not respected, there is a mass of lay interference, the tendency to reduce fees to a minimum is already apparent; and charges of undue influence on professional testimony, by employers and insurance companies on one side and by malingering employees on the other, are already common.

#### CONTRACT PRACTICE

The Judicial Council of the American Medical Association has defined contract practice as follows: "By the term Contract Practice as applied to medicine is meant the carrying out of an agreement between a physician or group of physicians, principal or agents, and a corporation, organization, or individual, to furnish partial or full medical service to a group or class of individuals for a definite sum or for a fixed rate per capita." This subject is so large and has so many ramifications that it cannot be gone into fully at this time. However, it is a subject of great potential interest to the members of the Arizona Medical Association.

There are a great many conditions in Arizona under which contract practice is not only legitimate and ethical but, in fact, the only way in which competent medical service can be provided. However, there is a form of contract practice which has not, as yet, made its appearance in Arizona, but with which we may have to contend sooner or later. I refer to the so-called mutual hospital and health associations that have sprung up in certain states of the Middle West and in California. These associations are controlled by groups of laymen or by individuals offering medical and hospital service to anyone who will buy a member-

ship and pay a nominal sum each month. The Judicial Council of the American Medical Association states, "Such schemes have been put into operation in various places and have failed within a few weeks or months because of inadequate income or because of the failure to render good service. The Judicial Council has regarded these schemes as being economically unsound, unethical, and inimical to the public interest."

I think this matter should be brought to the consideration of the Council of the Arizona Medical Association and thoroughly discussed and a proper stand should be taken thereon.

#### CULTS AND PRACTITIONERS

On account of the lax laws and inefficient enforcement of the Medical Practice Act, Arizona has become the Mecca and the dumping ground of a large number of irresponsible and pernicious practitioners. It is the presence of these in Arizona which has brought such disrepute to our standing in other states. To remedy this evil, there was an effort made in the last two legislatures to pass a Basic Science Act, copied after the acts in several other states, where it has proved so efficient as to clear these states of quackery. I recommend that such an act be again presented to the next legislature of Arizona and that the entire medical profession get behind the Public Welfare Committee of the Association so that this legislation can be brought to a successful termination.

#### STATE MEDICINE

The forces of progress are inexorable in their control of man and his fate. One of the greatest questions before the profession to-day is whether the physician is his own master or a servant of his patients, of the public, and of the state. There is a measure of public service in nearly every act of the physician. According to the wisdom of his acts, he can save the public and state or saddle them with the support of many weaklings and cripples.

His relation to the economies of modern life is changing daily with the progress of the times, but we must keep in mind that it is a serious matter to overthrow the tradi-

tions of the profession and to institute new and unproved methods in the practice of medicine, or to attempt to establish a new basis of public and professional relations. We must so hew to the line that no new conception of a medical practice can arise that will start that great bugaboo called "state medicine." If we so do, this new conception will not arise soon enough to affect our generation.

#### MEDICAL ETHICS

The reputation of the medical profession in its standing, to a large extent, is dependent upon the moral code which guides our actions. In these times, too little respect is given to general ethics, and to no group or profession are sound ethics more important than they are to medical men. They must be the controlling influence of our lives.

There are many practices among unethical men, which are abhorrent to any man of honor. I refer to unnecessary operations performed, such operations os are done through ignorance, dishonesty, or bad judgment.

The three essential requirements of medical men are honesty, good judgment, and scientific training. The most essential of these is honesty. These requirements should be recognized by both the profession and the public. I have the greatest confidence in the integrity of our profession and that the vast majority of the members of the Arizona Medical Association live up to the highest ethics of the profession.

Arizona is essentially a state of very small communities, and the best evidence of the high standing of the medical profession is shown in the esteem in which members are he'd in their communities. There is no place where one is submitted to a more merciless scrutiny than in the small town, nor is one likely to be judged more justly and given higher praise than in these small communities. The medical man is looked to for counsel, advice, and aid in all sorts of crises and conditions. There is no one who has more influence than he in his community. Of course, he is not loved by everybody, but he has the respect of everybody and the real affection of a great many, and herein lies the panacea of most of the problems of the medical profession in Arizona.

Every doctor should take an active part in the politics of his community and the state. Each individual running for a public office, especially in the legislative and the executive departments of the government, should be closely scrutinized and his position ascertained on all vital questions which are of interest to the medical profession and the public welfare of the state. I do not recommend that the doctor become a professional politician, but I do want him to exercise some choice in the selection of the representatives in the state legislature, so that we shall not again run up against a brick wall in our attempts to better conditions for the general welfare of Arizona. Advice on all questions affecting health and its associated conditions should be sought from the medical profession and such laws should originate with the profession. Instead, many of the legislators have looked with suspicion upon every attempt to better medical conditions, and, as a result, there has been failure. We are to blame in not seeing more intelligent men selected to represent us.

I recommend to you to so change our By-Laws, that the Council of the Arizona Medical Association shall meet in conjunction with the Committee of Public Welfare and the other officers of the Medical Association, at stated intervals, at least four times a year, to take up and discuss the problems of the Association, with full authority to act in matters for the best interests of the medical profession and the public.

I again thank you, gentlemen, for the high honor which you have given me, and I assure you that I shall do everything within my power to merit this trust.

# THE COUNTRY DOCTOR OF THE FUTURE

F. D. VICKERS, M. D. Deming, N. M.

(Address of the President before the New Mexico Medical Society, at its Semi-Centennial Session, Santa Fe, N. M., May 19-21, 1932.)

We, as doctors of medicine, have inherited from the ages a professionalism that leaves us amiss as business men. We are imbued with the idea of curing disease and, when we have become expert in the cure, we find we must deny ourselves the profit of our skill by preventing that which we would cure.

Our medical forbears have guaranteed to future generations, without money and without price, a knowledge, a foundation, a professional manner in the prevention and cure of disease. Now we come to times when we wonder if our professionalism, so founded, can survive.

We have discarded the habiliments which marked the doctor of other times. We hobnob with the business man; we serve on his boards; belong to his clubs; play his games and, along with him, subscribe to charities, although we give free care to large numbers of people which society has not as yet found any business method of guaranteeing medical care when they are, for any cause, impoverished. The average business man's hope and dominant ideal, in our democratic age, is to improve his own condition by making, buying, and selling, for profit. medical man's ideal is to lessen disease, and no one would knowingly employ a physician who would not prevent, if possible, that which he is prepared to treat.

In spite of great endowments, the money required for education and equipment of medical men is a never-increasing amount. The medical man of today should have a business right to expect money so invested to pay dividends—and dividends nowadays are not generally reckoned by the number of microbes hunted down.

A muddy crossroad is hardly the place for a bank or an up-to-date doctor. The place to practice medicine is, naturally, where the people are or can congregate. We live in a great new country settled by peoples who came to our shores with land hunger and our land has been settled up—even our Rocky Mountain region is fenced. Still we have in the United States a population of only forty to the square mile, while England has seven hundred and one, and Belgium six hundred and five.

We have in the United States 152,000

rural one-room schools, with more than three million pupils that as yet have not come under the consolidated school system. Many of these country people are necessarily more or less isolated. They need protection against contagious and nutritional diseases, such as smallpox, diphtheria, scarlet fever, typhoid fever, malaria, hookworm, pellagra, They need early diagnosis in and rickets. tuberculosis, syphilis, cancer, and other chronic diseases. These people have lost the crossroad doctor. He has died or moved away to the city to become a specialist, and there is no prospect of his place being filled by the oncoming medicos. In one generation, fifty per cent of the doctors have become specialists, and now fifty per cent of the medical students display a missionary spirit by selecting a specialty before they graduate. There being no special requirements for the specialist, we may possibly have, in time, too many who specialize. Specialism has come to stay, and the advance to be made in medicine in the future will not be made by the country doctor like Jenner and Koch. It seems more likely the future discoveries will come from much co-operation in large centers, by the correlation of work of many well-trained men. The general practitioner is the man to carry this knowledge we have gained to the people, and he also will give advice on many mean and unscientific troubles.

While we may hope for the time to come when impoverished peoples shall be guaranteed the necessities of life, including medical and hospital care, by some form of taxation or insurance, or by right of inheritance, there can never come a time when we can be expected to be well paid in money for all honest advice, and get patents on our microbe discoveries.

Twenty-seven million people are on farms and lend a stability to our government not generally recognized in our factory and the great mass of French peasants hold the national fortune. Eighty per cent of heads of families own land. The great proportion of savings is in their hands.

If the profits of our economic system, born of our industrial revolution, dry up, the waves that have gone from the country to the city may form a back-wash and carry the people back to the farms, and, while they may not sing as they work or make a festival of planting and of harvest time, they may at least carn their bread and have hope in the stability of our land. They will be spared the hardships of their ancestors who, on foot and in wagons, wrested the country from the wilderness and Indians, with high hope and determination to win or die.

Should some great catastrophe wipe out all of our great cities, the country would build new ones; should the country be destroyed, leaving the cities, they would be doomed. Our great industrial age has coaxed too many to the cities. The United States is an agricultural country. The farming industry is basic to our national prosperity to a greater extent than in many other countries. These scattered peoples of ours are entitled to the benefits of our scientific knowledge and are bound to have it by some method, sooner or later. Scientific knowledge is not discovered for the benefit of the city people alone.

By taxes, the city people who cannot pay have free hospital care, and sometimes politics lend this care to many who could pay. We should be able to help mold public opinion which would promote and foster some plan by which a small tax, with, possibly, a community budget and other help, would guarantee small community centers for these outlying districts which have no medical care. With our modern transportation and good roads, this would be both logical and practical. This center should be in close communication with larger centers.

A health officer—not necessarily full-time, a general practitioner, a health nurse, a few beds, and x-ray, with the aid of the state laboratories, could offer to these people diagnosis, prevention, and treatment, of disease. The infant mortality rate in New Mexico is frightfully high, due to poverty, neglect, and ignorance. Of these dying infants, one-third are never seen by a doctor. These medical centers would guarantee much to the poor and neglected, and help educate the ignorant.

In this scientific age, the general practitioner is especially blessed by the fact that the discovery of a specific for a disease has always simplified the treatment of that disease, and the treatment and prevention can be carried out by him.

A very small percentage of these isolated people need the services of a specialist, and this percentage should be guided to the specialist by the general practitioner.

We tax to support our schools, and a further tax to guarantee the health of school children and the community would not be burdensome. We are now paying this further tax in penalties. Science helps to determine democratic development. These people should not be denied what science has for the prevention and care of disease, and medical men should back some system to take the place of the good old country doctor who used to go to the people. In the future, the people will have to go to the doctor.

#### IMMUNIZATION AGAINST DIPHTHERIA (Toxoid Compared With Toxin-Antitoxin Mixtures)

MENNO S. GAEDE, A.B., M.D. Jerome, Arizona

(Read before the Forty-First Annual Meeting of the Arizona State Medical Association, held at Globe, Ariz., April 21-23, 1932.)

In 1897 Ehrlich<sup>1</sup>, in his exhaustive and thorough research, studied the reaction between toxin and antitoxin. He was the first to use the word "toxoid." In his extensive investigation into toxin and antitoxin, he noted that the toxin would deteriorate with time; that is, a toxin bouillon which was found soon after preparation to contain, say, 100 units toxin in a certain given quantity, would, after four or five months, be found to contain but 50 toxin units in the same gross quantity. It had lost, therefore, onehalf of its toxic power. In spite of this loss, however, Ehrlich found that such bouillon had retained its full original power of neutralizing antitoxin. Such an altered toxin Ehrlich called toxoid.

Von Behring<sup>2</sup> in 1913 was the first to em-

poly toxin-antitoxin as an immunizing injection in man. He used the undiluted toxin broth with its toxin nearly neutralized. In America, the pioneer work in diphtheria immunization was done by Park and his collaborators. They were the first to realize that, by using the Schick test to determine the susceptibility of children and a retest to note the change in the reaction, they could closely study the immunizing effects of the toxin-antitoxin injections in the human beings.

Toxin-antitoxin, as defined by Park', is toxin plus antitoxin, enough to not quite neutralize the toxin and yet greatly reduce the toxicity. It is essential that this preparation be very carefully prepared and standardized by testing its toxicity and potency on guinea pigs. The first preparations of toxin-antitoxin used were the 3L plus doses, but it was soon discovered that this amount of toxin caused considerable reaction locally, and so Park' and Schroder diluted the toxin before adding the antitoxin and found that 0.1L plus dose was just as efficient in producing immunity as the more concentrated mixtures; however, smaller amounts than the 0.1L plus dose were less immunizing. These writers state that the most important point is that toxin-antitoxin, to have the maximum effect, has to have such toxicity that a human dose kills a 250gram guinea pig in about four weeks. With decreasing toxicity, the immunizing effect is gradually diminished. This new preparation gave much less local reaction, since the reaction was due not so much to the specific toxin as to other substances, especially the dissolved bacillus substance. The 0.1L plus toxin-antitoxin, even under the best conditions, will become less toxic with age, except when frozen, but even then it is never dangerous to human life. Toxin-antitoxin deteriorates with age, and this is a distinct drawback because, when the commercial preparation suffers thus through transportation and storage, it loses some of its immunizing properties and, hence, becomes less effective, which may be the explanation of why some writers report from 50 to 70 per cent negative Schick tests, and others get

as high as 85 per cent after three injections of toxin-antitoxin.

In America, until recently, toxin-antitoxin has been used almost exclusively in the immunization against diphtheria. The lack of any extensive trial of toxoid in this country is largely due to the impetus given to toxinantitoxin prophylaxis in diphtheria by Park and his associates. Through their laudable efforts, a marked reduction in the incidence of diphtheria has been effected in America. But even in spite of mass immunization against diphtheria, there still occur annually thousands of deaths due to this disease. In Ontario' in the five-year period from 1921 to 1925, one out of every six deaths among children in the age group of 2 to 14 years, was due to diphtheria. In New York City in the year 1920, diphtheria was the cause of 800 deaths, while in 1929, 416 deaths occurred, and in 1930, this had dwindled down to 198 deaths. In New York City in the past fifteen years, over 500,000 school children have been immunized against diphtheria and, during the last two and one-half years, due to an extensive drive to stamp out this disease, over 250,000 infants and pre-school children have received it. All this immunization work was performed without any accident. In Yonkers, New York, in 1927, were 438 cases of diphtheria, with 23 deaths; in 1928, 152 cases with 11 deaths; in 1929, 66 cases with four deaths; and in 1930, 22 cases and one death. In the town of Jerome, Arizona, where we have about 1200 school children registered and many children of preschool age among the closely housed Mexican people, there has not been one case of diphtheria reported in the last fifteen months. In the last two years, approximately 85 to 90 per cent of all school children and many pre-school children have received either toxin-antitoxin or toxoid injections. This last fall all school children twelve and younger, regardless of any previous toxinantitoxin, were Schick tested, and all the positive reactors were given two one-cubiccentimeter injections of toxoid.

This study comprises data on 719 cases, the large majority of which are children of

school age. The material used for immunization was purchased through the Arizona Public Health department and was a product of a well-known manufacturer of biological products. All material used was well within the limits of the expiration date printed on the containers. In this group, all children except the pre-school group were given the preliminary Schick test to determine their susceptibility to diphtheria. Those showing a questionable test were regarded as positive. There were 103 children, ranging in age from 1 to 15 years, who had received three one-cubic-centimeter injections of toxin-antitoxin at weekly intervals. They were retested with the Schick test from four to six months after the last injection of toxin-antitoxin and 68 per cent gave a negative reaction, leaving 32 per cent still susceptible to diphtheria. No control Schick test was done and the reading was done on the third and fifth days.

Two one-cubic-centimeter injections of toxoid were given to 616 children. The interval between the two injections varied from three to four weeks. Of this group there were 112 pre-school children who had nct received a preliminary Schick test. Forty per cent of this group were children under 2 years of age, none being younger than 10 months. There were no reactions of note in any of these children, either after the first or second toxoid injection. The immunity response of this group was very disappointing. No control Schick was done. Eightysix, or 76 per cent of the 112 children, were Schick negative and 26, or 25 per cent, remained susceptible. In attempting to explain the poor result obtained in this group. it was thought possible, because the majority of the children were Mexicans, whose parents talk and understand English poorly, if at all, and who frequently appear with a different name, that there were children with a positive reaction who had never received any immunizing injections, and thus the percentage of negative reactions would be lower. The original number given the first toxoid, in the pre-chool children, was 225, and the final Schick test was done on

145 cases, of which 112 appeared for the reading of the Schick test. In one Mexican family, with four pre-school children, three reacted strongly positive and only one was negative. Could it be possible that, in some children, due to familial characteristics, it is difficult to produce an immunity response?

In school children between the ages of 5 and 7, there were 185 cases: of these, 160, or 85.2 per cent, responded negatively to the Schick test, 10 to 12 weeks after the final dose of toxoid. No control Schick was done. In this group, the reaction to the toxoid injections was moderate to slight in approximately 6 per cent of the cases. Eleven children of the 185 were marked absent on the teacher's record book the first or second day after the toxoid injection; this, however, cannot be interpreted as meaning that all the absences were because of the toxoid injection.

The largest group of children tested consisted of 319 cases and were children of 8 years and older, the greatest proportion being children 8 to 12 years of age. group also included four adults (teachers). Except in the four adults, no diluted toxoid tests for testing the sensitivity of the individual to this preparation were made. Of the 319 individuals, 292, or 91.3 per cent, gave a negative Schick test, 8 to 12 weeks after the final toxoid injection. As in the previous group, no control Schick was performed. Reactions were more severe and frequent in this group. Two Mexican female children, ages 11 and 12 years, had marked local and severe systemic reactions. Locally, there was swelling of the entire upper arm with redness and great tender-The general symptoms were headache, malaise, anorexia, vomiting, throat, and elevation of temperature up to 100 to 101 degrees F. All these symptoms subsided in 48 hours. The reactions occurred with less severity after the second injection. Of the total, 10 to 12 per cent showed moderate reactions, and 12 to 15 per cent, a slight reaction. Twenty-seven children missed school on the first or second day following an injection of toxoid. Fortytwo of the 319 individuals had a course of immunizing injections of toxin-antitoxin prior to the injections of toxoid. All these 42 children were Schick negative after the second toxoid dose.

The preference that toxoid or antitoxin of Ramon has received in France and Canada in the last few years, is due to certain important advantages that have been observed in the use of this preparation. In 1928, Ramon and Helie brought before the American medical profession the reasons for the advantages of toxoid. Toxoid, as defined by these authors is a potent diphtheria toxin treated with formaldehyde and prolonged heat. This produces complete detoxification of the material, which is tested as to its potency and non-toxic properties by injections into guinea pigs. Five cubic centimeters of the detoxified substance, injected into a 300-gram guinea pig, must not create any toxic symptoms in the pig. A standard toxoid contains 8 to 10 anatoxin or antigenic units per cubic centimeter. This is determined by the flocculence test which consists of the reaction in vitro, between the specific toxin and antitoxin. Toxoid must be innocuous, stable in its anti-genic power, heat resistant up to 65 to 70 degrees centigrade, and have high immunizing properties.

Toxoid contains no serum and, consequently, there is no danger of creating sensitization of the patient to later injection to horse serum. However, toxoid does contain from 30 to 50° times as much protein (from the broth and the organism) as is present in toxin-antitoxin. Due to the fact that, in adults and many older children, sensitization to the Klebs Loeffler bacillus has developed, it is thought that this is the reason for their reaction to the toxoid and the pseudo-reaction of the Schick test.

Long before Ramon demonstrated the clinical efficacy of toxoid, Glenny and Hopkins' used toxoid in the immunization of horses for the production of antitoxin (1904). These investigators, by the use of a concentrated form of toxoid, were able to detect antitoxin in the blood of a normal rabbit 9 days after the injection of the tox-

oid, and also showed that a guinea pig became Schick negative 11 days after an injection of the concentrated toxoid.

Using a highly concentrated and purified toxoid, Claus Jensen' was able by a single injection to confer on man a marked immunity to diphtheria. In a small series of children from 3 to 8 years old, he was able to establish immunity, as tested by the Schick test, in 88 per cent of the children. He used aluminum hydrate for concentrating the toxoid and injected material that contained 150 antigenic units per cubic centimeter. The injections were made in the subscapular space and caused no more reactions locally, or generally, than did the same number of cases given a standard dose. Jensen noted that, by using the concentrated toxoid, the immunity was established very rapidly, nearly 70 per cent being Schick negative after 15 days. Because of this rapid immunity established by the use of the concentrated toxoid, he warmly recommends its use in epidemics.

The review of the medical literature will soon convince us that the use of toxoid in diphtheria prophylaxis in the last few years has become very popular. This popularity is chiefly due to the large percentage of immune cases obtained by the injections of only two doses of the material. Ramon and Helie<sup>10</sup> report that, in France, in 1927, the number of vaccinations was 50,000; in 1928, it had reached 300,000; and in the first six months of 1929, it was 500,000. Ramon uses three injections of toxoid. The first injection consists of one-half cubic centimeter. The third injection, of one cubic centimeter, is given 15 days after the second. By using this method, Ramon and Helie state that from 95 to 100 per cent of Schick positive reactors would become Schick negative from two to three months after the last injection of the toxoid. Lesne", in over 1000 children, obtained a negative Schick response in over 90 per cent of the children by the use of two injections of the toxoid. Loiseau, et al12, by using three injections, obtained 99.4 per cent immunity in 161 children. Dick and Dick18, in a comparative study of toxin-antitoxin

and toxoid, on adults, report that, with five injections of toxin-antitoxin at weekly intervals, 82 per cent showed a negative Schick test, while 94 per cent immunity, two months after the last of three injections of toxoid, was obtained. These writers very highly recommend the use of toxoid in the immunization against diphtheria. Lai<sup>14</sup>, in 105 Chinese students, was able to secure only 65.8 per cent negative Schick test three months after the last injection of toxin-antitoxin, while he got 91.5 per cent negative Schick tests following three doses of toxoid. This writer, however, remarks that the reactions following the toxoid injections were much more severe than those resulting from toxin-antitoxin. Weinfelt and Cooperstock on a series of 104 well-controlled adult cases, by giving two injections of toxoid, obtained 92 per cent Schick negative reactions. found that 25 per cent were reactors to the intradermal diluted toxoid tests and that 7.3 per cent had a general and local reaction following the injection of toxoid. These authors maintain that, "while in a general way it was found that local reactions to toxoid are much less frequent as compared with those of toxin-antitoxin, general reactions to toxoid were observed with greater frequency. Reactions to toxoid in young children are Study on the nature of these reactions to toxoid tend to indicate that allergy plays an important role in their manifesta-Particularly striking was the high incidence of reactions to toxoid in persons presenting both a history of allergy and a pseudo-reaction to the Schick test".

In a series of 117 infants of 2 years and under, 60 per cent being 8 months old and under, Greengard obtained a negative Schick reaction in 98 per cent. He gave two one-cubic-centimeter injections of toxoid; in 81 cases, with one week interval between the injections, and, in the remainder of the children, with three-weeks interval. He did not observe any difference in the immunity response in the two groups. Many of his cases reacted negatively to the Schick test two weeks after the last injection of toxoid.

Working with adults. Kracke and Allen",

on a small series of controlled cases, found that toxoid (two injections) produced immunity in 88 per cent, while three injections of toxin-antitoxin produced only 56 per cent negative Schick reactions. The use of toxoid was characterized by the frequency of severe reactions, while toxin-antitoxin was responsible for only a few reactions of less severity. These investigators conclude that such results only serve to emphasize the importance of immunizing children before the age of six years.

In a comparative study of toxin-antiof 0.1L plus dose of toxin-antitoxin, he pro-355 children immunized with three injections of OIL plus dose of toxin-antitoxin, he procured 64 per cent negative Schick tests, and in 475 children receiving two doses of onecubic centimeter of toxoid, with an interval of one month, he obtained a negative Schick reaction in 95 per cent.

It is evident from the results here reported, and those reported by many others, that diphtheria toxoid, as it is to-day available, is a superior immunizing agent compared with toxin-antitoxin.

Whether one uses toxin-antitoxin or toxoid in the immunization against diphtheria, there are certain fundamental facts one connot overlook in carrying out a successful program for diphtheria immunization. is necessary that the product used as the immunizion agent is of the required potency, and that a Schick test be done on all cases immunized. Roads10, of the Cook County Hospital, investigating commercial preparations of toxin-antitoxin, found that there was a very great variation in the potency of the commercial preparations on the market, and even considerable difference among the lots made by the same manufacturer. He found that of 64 nurses who had, within the last two years and prior to three months, had three injections of toxin-antitoxin, 67.2 per cent reacted positive to a Schick test. Of this group of nurses, 10 developed diphtheria. showing a high percentage of diphtheria in supposedly immune individuals. Roads concludes that, "to obtain good results, the potency of commercial preparations employed must be carefully controlled and, from results here reported, the necessity for Schick retests three months after the last dose of toxin-antitoxin and more immunizing doses when they are indicated, is evident."

Nothing has done so much harm to interfere with the campaign against diphtheria as the occurrence of diphtheria in supposedly immune subjects; this could be largely prevented by the proper use of the Schick test on all cases immunized. That certain errors can occur in the application and interpretation of the Schick test, is not deniable; however, when one is careful to use freshly prepared material, well within the limits of the expiration date, and uses good care in the injection, the percentage of error should not be great. A control Schick is very desirable, especially in adults older children, in order to recognize the pseudo-reactors, because in these reactors very often the toxoid will also produce a rather marked reaction. According to Cooperstock18 and Weinfeld, the importance of performing a control test lies primarily in the detection of pseudo-reactions to the Schick test, which seems to bear some definite relation to the diphtheria bacillus or a sensitization to a protein in the material. Park estimates that positive reactions to cotnrol tests occur in about 5 per cent of the cases. Schwartz and Janney emphasize the necessity of a Schick test thus: "Where the individual child is considered, none should nor can be pronounced immune to diphtheria, unless, several months after receiving the diphtheria prophylaxis, a negative Schick test is obtained." Gardham<sup>20</sup> becomes very emphatic and states that "It is absolutely essential that a Schick test be done 3 to 6 months after a course of toxinantitoxin, to determine if susceptibility still exists." It is not so essential that a Schick test be done prior to the immunization, especially in pre-school children.

Park\* recommends the use of the test in all older children and adults and brings out the fact that, in rural communities, 45 per cent of the adults are not susceptible, while in the cities from 70 to 85 per cent will give a negative Schick test. He points out two

factors that should be taken into consideration in deciding whether or not to give a Schick test prior to immunization: (a) age group, and (b) density of the population in the community.

It is generally known that infants and young children are very susceptible to diphtheria. Infants after the sixth month lose their inherited immunity. Many infants born in rural communities are susceptible very soon after birth. Babies within a few days of birth are found not to give a very good response to diphtheria immunization, but at 3 months or after, babies are suitable for immunization so far as their immunity response is concerned. It is the general consensus of opinion of many writers that children under 6 years of age seldom have any reaction as a result of toxoid injections. Schwartz claims that, the younger the child, the less likely does a reaction seem to occur and that, once immunity is acquired, a child usually remains immune.

The single outstanding factor preventing the complete eradication of diphtheria deaths is the problem of immunizing the preschool child. This is a problem almost entirely out of reach of the public health officer, and, therefore, becomes the duty of the private physician. Due to the high percentage of susceptibility in this age group, it at once becomes apparent that there children must be reached by our program of immunization against diphtheria before the mortality of this disease will be much further reduced. F. M. Meader 21 maintains that "the records of the last three years in Detroit show that, as far as prevention of deaths is concerned, the immunizing of one child 6 to 12 months old will accomplish as much as immunizing forty-nine children 14 years old." The ideal age group of children to protect with toxin-antitoxin or toxoid is from 6 to 18 months. Nearly every writer on the subject of diphtheria is from 6 to 18 months. Nearly every writer on the subject of diphtheria immunization emphasizes the necessity of giving toxoid or toxin-antitoxin to infants and pre-school children. Kinnaman<sup>22</sup>, in a review of diph-

theria in Kansas, concludes that "to be successful in the eradication of diphtheria, the pre-school group must be immunized. Babies should be immunized when they reach the age of six months." Fitzgerald 23 stresses the importance of immunizing children 6 years old and younger, because of the high incidence of diphtheria in this age group, and the less reactions resulting from the immunizing injections. Bloomberg and Fleming<sup>24</sup> suggest that, in children under six years, practically no reactions occur following toxoid injections. Fuersterman26, in his conclusions, remarks, "Complete eradication, the object of diphtheria prevention, depends entirely upon the immunization of the pre-school child, who can be reached by none other than the private physician." This opinion is held by Schwartz<sup>26</sup>, Park, Ramon, and others.

#### SUMMARY

- 1. Results with toxoid, in the active immunization against diphtheria, are recorded and compared with toxin-antitoxin. In 103 Schick-positive children, three injections, at weekly intervals, of commercial toxin-antitoxin, produced 68 per cent negative Schick reactions, 3 to 6 months after the final injection. In 504 Schick-positive individuals, two injections of toxoid, at three to four weeks' interval, gave a negative Schick test two to three months after the last injection in 86.2 and 93.1 per cent of the cases.
- 2. In 112 pre-school children, two injections of toxoid produced a negative Schick test in only 76 per cent. The reason for such a low immunity response in this group is rot definitely accounted for.
- 3. The advantages of toxoid over toxinantitoxin in the prophylaxis of diphtheria, are threefold: (a) The larger percentage of negative Schick tests obtained after the injections of the material, with a greater rapidity of establishing this immunity. (b) The avoidance of possible serum sensitization in the subject immunized. (c) The greater stability of the preparation and its absolute innocuousness.
- 4. The disadvantage of toxoid, compared with toxin-antitoxin, lies chiefly in the ques-

tionably more frequent occurrences of local and general reactions resulting from the in jections. This, however, can be obviated by excluding those individuals who show a strong pseudo-reaction to the Schick test and those who are positive to the intradermal injection of the diluted toxoid.

- 5. The routine employment of the Schick test two or three months after the completion of the immunization, is regarded as essential.
- 6. Any program of diphtheria prevention must include and especially emphasize the necessity of immunizing the pre-school child.

#### CONCLUSION

The use of toxoid as an immunizing agent in diphtheria prophylaxis is highly recommendable, and, in children, is to be preferred to toxin-antitoxin.

#### BIBLIOGRAPHY

- 1. Ehrlich, Hiss, and Zinser: Text on Bacteriology, 1927, pp. 210 to 211.
- 2. Park. W. H.; and Schroeder, May C.: Diphtheria Toxin-antitoxin and Toxoid, a Comparison. Am. J. Pub. Health, 22: 7-16. Sept. 1931.
- 3. Park, W. H.: Some important facts concerning active immunization against Diphtheria. Am. J. Dis. Child. 32: 709-717, Nov. 1926.
- 4. Defries, Robt. M.: Diphtheria Toxoid (Antitoxin Ramon) J. Pub. Health 19: 1928.
- 5. Schwartz, A. B.; and Janney, F. R.: The Immunization of the Pre-School Child against Diphtheria with the use of Toxoid. Wisc. Med. J. 30: 19-722. Sept. 1931.
- 6. Ramon. G.; and Helie, G. I.: Diphtheria Prophylaxis in France. Experiments with Anatoxin Vaccination. J. A. M. A. 91: 1028-1033, Oct. 6, 1928.
- 7. Ray, H. R.: Toxoid as an Immunizing Agent in Diphtheria. J. M. Sc. 182: 251, Aug. 1931.
- 8. Glenny, A. T.; and Hopkins, B. E.: Brit. J. Exper. Path. 4: 283. 1923.
- 9. Jensen, Claus: Immunization of Children to Diphtheria by a Single Injection of Purified and Concentrated Diphtheria Anatoxin. Compt. rendus de la Soc. de Biol. 108: 528-532. Nov. 6, 1931.
- 10. Ramon. G.; and Helie, G. I.: Anatoxin as an Immunizing Agent against Diphtheria. Am. J. Dis. Child., 39: 719-722, April, 1930.
  - 11. Lesne. as quoted by Ramon. Reference 6.
- 12. Loiseau et al., as quoted by Ramon, Reference 6.
- 13. Dick, G. F.; and Dick, G.: Immunization against Diphtheria. Comparative study of Toxin-Antitoxin and Toxoid. J. A. M. A. 92: 1901-1904. June 8, 1929.
- 14. Lai, Daniel G.: Comparative values of Toxin-Antitoxin Mixtures and Anatoxin (Toxoid) in

- Diphtheria Immunization. China M. J. 45: 1084-1088. Nov. 1931.
- 15. Cooperstock, M.; and Weinfeld, G. F.: Comparative Effects of Diphtheria Toxoid and Toxinantitaxin as immunizing agents. Am. J. Dis. Child. 38: 35-46. July, 1929.
- 16. Greengard, Joseph: Diphtheria Toxoid in Infancy. J. A. M. A. 97: 228-230, July 25. 1931.
- 17. Kracke. Roy; and Allen, Angel: Immunization of Adults against Diphtheria. Comparison of Toxoid and Toxin-antitoxin in Adults. J. M. A. Georgia. 20: 271-274, 1931.
- 18. Harrison, W. T.: Immunizing values of Diphtheria Toxin-antitoxin Mixtures and of Diphtheria Toxoid. Public Health Reports 45: 1883-1888.
- 19. Roads, Paul S.: Commercial Preparation of Diphtheria Toxin-Antitoxin. J. A. M. A. 90: 254-256, Jan. 28, 1928.
- 20. Gardham. J. W.: Statistical Study of Diphtheria in Newark. with Special Reference to Cases Occurring after Schick Test or Toxin-antitoxin Immunity. J. M. Soc. New Jersey 28:626-635, Aug., 1931.
- 21. Maeder. F. M.: Importance of Immunizing Pre-School Children against Diphtheria. J. Michigan M. Soc., pp. 22-26, Jan. 1929.
- 22. Kinnaman. C. H.: Review of Diphtheria in Kansas. Am. J. Pub. Health 21: 1013-1018, Sep. 1931.
- 23. Fitzgerald, J. G.: Diphtheria Toxoid as Immunizing Agent. Canad. M. A. J. 18: 146-152, 1927.
- 24. Bloomberg. Max; and Fleming, A. G.: Diphtheria Immunization with Toxoid. Canad. M. A. J. 17:801-823, July, 1927. 25. Fuersterman, H. L.: Diphtheria Immunization in Pre-School Children. J. M. Soc. New Jersey. July, 1928.
- 26. Schwartz, A. B.; and Janney, F. R.: Comparative Values of Toxoid and Other Agents in Immunization of Pre-School Child against Diphtheria. Am. J. Dis. Child. 39: 471, March, 1930.

#### DISCUSSION

DR. C. V. BARLEY (Tucson): I should like to commend Dr. Gaede on the relatively large series of cases upon which this report is based, and on the careful manner in which he has proceeded in securing his results. There is always something to be learned from the re-evaluation of a procedure which has become standard, in that we are apt to develop too confident an attitude of security. We find from this report that, under carefully controlled conditions and usnig products meeting recognized biological standards. it is possible to obtain a higher percentage of positive Schick reactors after the customary time interval has elapsed, than is reported in most series. This was found true in the use of both toxin-antitoxin and toxoid, although the results conform to the majority of previous observations in that a higher percentage of immunities was obtained within a shorter time with toxoid. It seems unlikely that the omission of the control test was a factor here, as the false positive reaction has usually faded by the third day, and in almost all cases by the fifth.

At any rate, such surveys as this have helped us in forming our judgment about the method of choice. We can certainly say today that diphtheria toxoid holds that place in diphtheria immunization, where one year ago it might have been said with less certainty, and two years ago would have aroused violent discussion for lack of evidence. As the doctor states, the most important advantages of toxoid immunization over other methods are (1) its freedom from animal serum, (2) the more rapid production of immunity in a higher percentage of cases. and, of less importance, (3) the lesser tendency towards disagreeable reactions in smaller children. Dr. Parks of the New York City Health Department, who has had probably as extensive and as practical experience with this problem as anyone, says that there is no case on record of a fatal reaction to the small amount of horse serum contained in toxin-antitoxin, or of a case in which sensitization to such a degree had occurred from its use. Nevertheless, there have been some fairly severe ractions in the extremely allergic type of individual, so there is a valid argument for the use of a preperation like toxoid, which contains no serum. We are, apparently, recognizing more cases of allergy of all types than ever before. But we do not know yet just what influence the wider use of horse serum may be having upon the subsequent development of chronic allergic conditions such as asthma and hay-fever. Until we know more, its use should be tempered by thoughtful judgment.

In my own practice, I have been using toxoid almost exclusively during the past year and a half, with the exception of older children who have reacted positively to the diluted toxoid intracutaneously. The number of cases is yet too small to form the basis of a statistical report, but about 10 per cent showed a positive Schick test at the end of three months and were given an additional injection of toxoid. There have been no systemic reactions noted in children under 5 years of age, and very few local reactions of a mild nature.

Dr. Gaede raises the question of the possible influence of familial characteristics upon the immunity response. It has been found that there are a few children who seem to be unable to respond to the stimulus and manufacture antitoxin. Thiele (Archiv. fur Kinderheilkunde, Sept. 1931) reported 31 pairs of siblings in whom 27 pairs reacted similarly to the Schick test. Hirschfeld, at Warsaw, has worked out in a fairly comprehensive study, the relationship between the positive Schick test in the parents and in the offspring. He finds that, where both parents were Schick positive, all the children were apt to react positively also. Where both parents were negative, two-thirds of the offspring were negative and one-third positive. Where on parent was positive and the other negative, the children were 56 per cent positive. These findings would tend to indicate a familial factor in the presence or absence of natural immunity to diphtheria, and might be considered evidence in favor of a familial type of response to an immunizing agent. It also raises the question

of whether or not, in some children, due to racial characteristics. it might be difficult to produce an immunity response. Dr. Gaede's cases were mostly Mexicans, where previous reports have been based, in most instances. on other nationalities or a mixture.

During the past year there has been an increasing interest shown in this country in the percutaneous method of immunization, using Lowenstein's ointment. developed in Europe. It is an ointment containing not only toxoid but an unfiltered full culture of dead diphtheria bacilli, supposed to produce an antibacillary action essential to absolute immunity. The advantages claimed for it are: (1) as effective as other methods (which is yet to be proved); (2) avoids introduction of foreign protein directly into the lymphatics; (3) no free toxin liberated in the system; (4) no constitutional reactions. Reports concerning it are still contradictory, some men, like Arthur Abt of Chicago, claiming as high a percentage of immunes as from any other method, and others finding a definitely lower percentage of successful immunization, with a tendency for the Schick test to become positive again after a year or less has elapsed. The technic employed is to rub into the skin a roughly measured amount of the ointment, using the chest, abdomen, or inside of the arms, as sites of election, and the surface is not to be washed for 24 hours. One might also mention the observation of Schick and Topper of New York that tonsillectomy tends to convert a positive Schick into a negative one.

I think such a survey as this emphasizes the importance of doing follow-up Schick tests on all cases. following immunization, and not sitting back with the assurance that nine out of ten of our patients are getting a satisfactory immunity response. The few cases which thus show persistently positive Schicks can then be given subsequent injections, and special attention may be paid to any throat condition which may supervene.

# INDUSTRIAL SURGERY AND THE INDUSTRIAL COMMISSION

BURT H. CLINGAN Phoenix, Arizona

(Read before the Forty-first Annual Meeting of the Arizona State Medical Association, held at Globe, Ariz., April 21-23, 1932).

I am pleased with the opportunity of appearing before this distinguished body of professional men. I appreciate the privilege of being here to discuss with you some of our problems, to talk over with you and secure your counsel regarding some of the things which are mutually troublesome. I feel that this discussion here today is of importance to the future of our state.

The Industrial Commission, at its inception six years ago, appreciated that success in carrying out the fundamental purpose of the Workmen's Compensation Law is, to a great extent, bound up in the understanding by your profession of the law and your cooperation with the Commission. The first matter acted upon by the Commission, then composed of C. W. Van Dyke, chairman, R. B. Sims (present chairman), and myself, members, was the issuance of a call to the physicians and surgeons of the state, asking their attendance at a conference for a discussion of the law and its operation. This meeting was splendidly attended. Following said meeting, and with the co-operation of our then consulting surgeon, W. O. Sweek, we drew up rules and a fee schedule regarding and regulating practice under the Compensation Law. The only change since that time has been toward a further liberalization of the fee schedule. The Commission felt that it should, in the interest of the injured workmen of Arizona, attract to our practice the best skill in Arizona. For that reason our schedule is high, probably about twice as high as the average schedules throughout the United States. The Commission does not now feel exactly as it did then. We do not now feel that we should attract to our practice the ablest men of your profession. We rather feel it is our incontrovertible duty to see to it that that type of surgeon, and that type only, be secured for such practice. If the Commission is blameworthy as regards its medical policy, the premise for such blame is its lack of courage—or of the knowledge how-to carry out this conclusion.

I am not going into a discussion of chiropractors and others of their class, or of some of the unfortunate results attending their treatment. The Commission appreciates that they have their place in the treatment of bodily ills, and by its rules and regulations has pretty well arranged for their remaining in said place. This discussion, however, is regarding industrial surgery and the Compensation Law and the problem of how to secure industrial surgeons and industrial surgeons of the first rank only, for the practice of industrial surgery.

Your profession appreciates that your profession is not an exact science. You appreciate that some of your members have a greater need of ability and skill than others. You appreciate that knowledge in your science is growing daily and that some among you are, to a greater or lesser extent, keeping up with said growth. Each of you in your experience has known cases unfortunately handled.

The Industrial Commission is also familiar with cases not skilfully handled—many of them. We find that some doctors will remove a semi-lunar cartilage of the knee with no resulting permanent dsability in 70 or 80 per cent of the cases, whereas other doctors performing the same operation will invariably end up with an unfortunate result. I will cite a couple of instances of inadequate handling of our cases.

Two or three years ago a man came into my office who, some six months previously, had had all tendons cut midway the phalanges of all the fingers. The wounds had been cleansed and had speedily healed without any infection. The attending surgeon had, however, not bothered about the tendons, and the man had a practically useless claw of a hand. Being an out-of-Phoenix case, it was possible to refer him to one of the Phoenix surgeons without giving offense. During the six months the tendons had all crawled down into the palm, and their repair and the repair of their sheaths necessitated the laying open of practically the whole hand. It was accomplished skilfully. That, however, does not excuse the first surgeon.

The sceond case was much more tragic. A man came into my office to see what his award would amount to. I had already looked over his file. I knew that he was a white American, 39 years old, with a wife and four children; that he had been carpenter foreman on the construction of one of the large buildings in Phoenix; had slipped and fallen some distance onto his shoulder. That he had immediately gone to a doctor of his own choice, who had reported to the

Commission a dislocated shoulder, temporary disability of two to four weeks, and prognosis of no permanent disability. case ran along as usual without questioning by us, for about twice that period. The Claims Department then called the doctor who advised that the man had lost the use of his arm. We asked for more specific details, but he did not seem to know just how it had happened. Investigation and examination revealed that, following reduction of the dislocation, the surgeon had strapped this man's arm against his body and held it in that position for a period sufficient to cause injury to the brachial plexus beyond possibility of regeneration. I felt terribly sorry for the man-slender, wellbuilt, splendid type of the best class of American craftsman. I motioned him to sit down and started to figure out what his compensation would amount to. I heard a funny kind of sound and looked up; the man across the desk was gently sobbing, his eyes tight shut, tears running down his cheeks. I got up, went around and put my hand on his shoulder. He blurted out, "I want my arm. I want my arm." His right arm was hanging useless at his side. He went on, "I have to have my arm. My wife needs it, my babies need it. I've always had it. I have to have it." I wanted to tell him to loosen up a pick handle and go down and brain the doctor, but I couldn't. The only honest thing I did was to tell him, "I am sorry." And so I say, the Industrial Commission does not feel they should attract to their practice the most skilfull of industrial surgeons, they rather feel that some way must be provided whereby they will secure such surgeons. I will revert to this again in closing.

The question of reports will be passed briefly—for, no matter what I say, it probably will not make much difference. The Industrial Commission, in order to function properly, must have reports. Making reports is a chore at any time; I have no solution. The report should state the exact pathology, describing it clearly; otherwise the Commission is in the dark and unavoidable delay is occasioned. Without exact

pathology and intelligent prognostication, the case cannot be intelligently handled, nor can a proper reserve be set up. Reports are a necessary evil and the blanks ask questions often difficult to answer, but, even though an answer may now and again prove to be incorrect, they are on the whole of tremendous value to a Claims Department, and such value is in direct ratio to the definiteness of the answer. At the time of discharge from treatment, disability, if any, must be estimated. In estimating specific disabilities, the loss reported should be based entirely upon the loss of function of the member involved. The man's age, occupation, and so forth, are matters for the Commission to consider; the doctor's report should be his evaluation of functional disability.

The next point I wish to discuss is the compensability or noncompensability of cases. An effect which is the natural and probable consequence of an act or cause of action is not an accident, nor is it produced by accidental means. The Compensation Law was designed to arbitrarily assess to an employer liability for disabilities resulting from accident arising out of, and in the course of, employment.

Rates of premium are predicated upon the legal interpretation of this phrase. The Industrial Commission is not an eleemosynary institution, nor can money be paid out except such money as has been received from premiums. No day is complete except some disabled man comes in and states—"Well, the doctor told me I am entitled to compensation," I submit that this is not the function of the doctor. The principal function of the Industrial Commission is the determining of the compensability or noncompensability of cases. It is the function of the doctor to advise the Commission and to advise the man what he thinks is the matter with him, what probably was the cause and what probably is the best way to effect recovery. But as to whether a condition is compensable—in view of the law—is a question for the Commission. I believe doctors who have had the most experience with the Commission will, without hesitation and unanimously, agree that the Commission leans backward in its liberality. The line of

compensability may not, however, be placed outside the law. The Compensation Law is a law, not an opinion.

It has been estimated that, of the \$50,-000,000.00 annually spent by the railroads of the country as their cost of industrial accidents, \$25,000,000.00, or one-half, is a lsos due to improper and ineffective treatment. I do not agree that this is true, for, if true, it is a terrible arraignment of the efficiency of our biggest industry. Nevertheless, there can be no question but that effective and proper treatment would save untold misery, both immediate and future, to the thousands of men annually injured in this country.

Reconstruction surgery following trauma is now recognized as a specialized branch of your profession. This has in great measure been brought about through the economic pressure upon industry of the increasing benefits provided by our Compensation Laws. It is conceded that the regaining of function of an injured member is the patient's job; the job of the surgeon—following original skillful treatment—is on the psychological side, in the restoration of the patient's confidence in his ability to release the staff of compensation and to again return to society on his own. The members of your profession are naturally, properly, sympathetic. You, nevertheless, at different times have treated noncompensable traumatic injuries—a self-supportnig farmer not covered by insurance, we will say. Both for his sake-physical and psychologicaland for your own sake, for the sake of a proper fee and for the sake of your reputation, you have permitted—you have urged him-soon, to resume his occupation. You have told him that it would cost him something in pain but that it would be well worth it to him in the long run. You have told him to keep a stiff upper lip and return to work. We appreciate that the picture is somewhat different when the man is on compensation and that probably his attitude commands your sympathy. The same underlying facts, however, obtain, and merit the same treatment. It is difficult to convince a patient that occupational therapy (exercise gained with an increasing unconsciousness of same, by some regular employment)

is possibly the one thing which will, if started in time, make the difference between a real permanent disability and complete recovery. The fact that it may be difficult to convince the patient of this, does not lessen your obligation therein. Undue prolongation by the physician of the period of disability, unnecessarily instilling into the patient's mind fear of permanent disability, possibly invalidism, together with an assumption of effects from questionable causes—these things constitute the grounds for most of the misunderstanding between the Industrial Commission and your profession. It cannot be lost sight of in this connection that the average age of injured men is in the mid-thirties and that for them to lie off for a year, after a life of activity, will very frequently mean the activation of some disorder in no way connected with injury and yet equally disabling. The waiting for a final five or ten per cent improvement in the function of a member may be very disastrous to the rehabilitation of the man as a whole, and for the sake of the man himself it is better to report such functional loss as a permanent disability (for which disability the man will then secure an award) and allow the patient, without further delay, to resume employment. This also may forestall the growth of so-called traumatic neurosis, which may prove fatal to any return to usefulness. Such neurosis usually follows long-continued idleness on compensation, is superinduced by a desire complex for a continuance of compensation, impelled by a fear for the future.

In regard to the injured workman himself, I wish to say that there are surprisingly few actual malingerers. The chief difficulty we encounter is where disability is the result of a pre-existing or congenital condition; the disabled man's attention being called to the disability by a minor accident or incident. He honestly feels he is entitled to compensation. He does not rightly appreciate that the human machine will naturally wear out and that the Workmen's Compensation Law is not a pension law, or a law providing compensation for any or all disabilities, but that rather it is a law assessing to an employer, or his insurance car-

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rier, liability for compensation for such disability as the employment may be held to have caused through accident. In this connection your profession can help infinitely.

The question of choice of physician by the injured has been touched upon briefly. In direct comment, I will say that the reasons why practically no compensation laws so provide, are both legal and humanitarian. Under the Compensation Law the employer is charged with the duty of providing treatment and is responsible, in compensation payments, for the economic result thereof. The employer has a more immediate economic interest than even the injured man, whose interest, economically, is aroused later. The law assures prompt, competent, and adequate service. More cannot be asked. And the employer pays for There is no question as to the therapeutic value of confidence and faith which a patient may have in his own physician. This confidence and faith are immediately reinstated, and, in fact, enhanced, by the knowledge that he is in the hands of the best man available. The question of inalienable rights, if such a right exists, has not been abrogated. The injured man still has permission to select his own physician. he does, however, he must do as he did before the Compesnation Law became effective. He may waive this benefit which the law offers him, and pay for the service himself. In fairness you will agree that an employer or his insurance carrier, with their immediate economic interest, have probably theretofore arranged for more able and adequate attention than an injured man or his family will choose with their limited knowledge and under the stress of the occasion. The greatest danger of permitting so-called "free choice" by the injured man and without limitation, however, is the fact that such injured would be subject to the exploitation of unscrupulous practitioners, to the inroads of quackery and all other of the healing sciences by which the body politic is assisted or, maybe, afflicted. Ambulance chasing in its palmiest days could not possibly be any worse than the situation which would be brought about by such a change.

In starting a discussion of the retention

of the Compensation Law in Arizona, I will quote from a talk made some years ago by a member of an industrial commission where conditions were practically identical with those in Arizona today. He remarked: "We had an unnecessarily high percentage of clever, able, more or less unscrupulous 'ambulance-chasing' lawyers. The more thoughtful of these welcomed a law providing for decent settlement of personal injury claims between employer and employee. Others fought and are still fighting. Some doctors—we are happy to say but very few -were the natural associates of such lawyers. This stamp of doctor is not the highest type either of man or doctor. An injured employee is entitled to treatment such as these doctors have not the ability to give. They do not get our busines and they are not pleased. A few lawyers and a doctor or two or three tried to repeal the Compensation Law a year ago. They failed, they will try again and fail. No state, no country, having once adopted Workmen's Compensation, has ever gone back to the old system."

If we revert to the old order what is the picture? In the first place, remember, negligence is a cold-blooded, cut-throat business at best. The question of payment for medical service is not important. In the event of winning a suit in court, the subject of whether the doctor is paid and how much, is usually a matter of negotiation with plaintiff's attorney, or the doctor may receive something from the injured man himself, but inasmuch as in only a small percentage of industrial injuries may liability be assessed to the employer, you may logically arrange with yourself for the performance of the most of this work gratuitously and for the prevarication, exaggeration, and misrepresentation with which tools you will be asked to deal if you expect payment for your services following long drawn-out and expensive suits in court. Ability and integrity, which are the things demanded today, will then be neither appreciated nor paid for. It should be borne in mind that practically all law is the result of compromise. In the creation of the Compensation Law almost everyone had to give up something. employee, the employer, the lawver-all

yielded. The doctor was not a party to the compromise. He gave up nothing. He gained a great deal. The doctor must now yield—not a thing which he has possessed—but merely an advantage he is now seeking to gain.

Now, we are right back exactly where we started six years ago. We are, properly, still striving for an ideal. In the contacts and relations of the Industrial Commission with the doctors, as in all human contacts. friction and disagreements arise. The fact that they do is not remarkable, it is the spirit with which they are met and disposed of which is indicative of the integrity of the parties thereto. It would be the same regardless of personalities. The inate honesty of the majority of intelligent persons may not be questioned. You and I both are intelligent. We have an ideal. The first problem is the avoidance of accidents. That ideal will probably never be reached. The next problem is obtaining correct and proper handling of the injured workman when he does have an accident. This ideal may be approached. It may be practically reached with your unselfish and honest co-operation. We appreciate that your business is the treating of the disabled. It is both natural and proper that you should desire as much of that business as you can secure. Our approach to this question is entirely different. Without disturbing the ethics of your profession, which, for the most part, are splendid, I must frankly state that the only interest of the Industrial Commission is not the providing of business to anyone—and I mean, exactly, to anyone—but rather our interest is the rehabilitation of the injured workman. I intimated a little while ago that the Commission should courageously proceed to direct all industrial medical cases in Arizona instead of possibly two or three per cent. (In Maricopa county, where we of necessity have to maintain office for our chief surgeon, we direct the city and county work to him). The Commission does not believe that directing of the medical case is the solution, nor do I. If we are able to combine the good points of both systems, everyone will benefit. The Industrial Commission will continue to permit the injured

workman and his employer to select the doctor. To repeat, the Industrial Commission will continue to permit the injured workman and his employer to select the doc-As in the past, we ask the doctor, if he recognizes the case as not within his best sphere, to refer it in turn, to another of your profession, or to call in consultation, our surgeon, or such surgeon as he considers advisable, and at such times as he considers advisable. Be fair with us. We are not a body with unlimited funds. We are willing—we want—to pay for the best treatment, but we want the best when we pay for it. Be fair, is all we ask. Be fair, and regard our problem.

#### DISCUSSION

DR. J. H. PATTERSON (Phoenix): Mr. Clingan's paper on Industrial Surgery and the Industrial Commission is very interesting and enlightening, and I am very happy that this important subject has been included on the program.

In the Salt River Valley, particularly Phoenix, there has been waging quite a bit of controversy concerning the Commission, its actions and its fairness to the physicians and patients. There has been quite a concerted action on the part of some labor unions, politicians, and lawyers, to have the act repealed. This I am heartily against. The act is a good act; in fact, it is one of the best industrial acts any of the states have. However, some of us no doubt find fault, and justly so, with the administration of the act at times. I think perhaps there is good reason for complaint against the Commission by some doctors and some workmen, that there has been discrimniation, not necessarily against some doctors, but rather in favor of one or two other doctors. There are even some accusations that the Commissioners are merely figureheads, and that the Commission is run by an individual outside, and that this accounts for one or two doctors getting so much work, they being connected with this particular individual. There are always two sides to a question, however, and I have no doubt that there are a number of instances in which the Commission can find plenty of fault with us as doctors. There are cases on record of trickery and dishonesty of doctors, and also, which is more sad, of neglect of patients, and sometimes ignorance in procedure, or at least inability to care for these cases.

I think it wise to clean our own doorsteps at the same time we try to alter other conditions. I think we should make our county societies more active and more dominant. As things are now, irregulars continue to thrive. Incompetent doctors continue to make blatant mistakes, and cause many sad patients to look askance at doctors in general and turn right around and solicit the irregulars for aid.

There is only one way in which we can arrive at

a satisfactory administration of this law, and that is for us first of all to be honest ourselves, run out the irregulars and incompetents, and give the necessary and whole-hearted cooperation of the medical profession to the Commission. Then we can command and expect honest and conscientious administration.

I think there was a time in the past when we broke faith with the Commission, after we had agreed to work with and help them in the just fixing of compensation and passing upon the type of work done in doubtful cases. This we must despise ourselves for, and in some manner seek to regain that confidence and cooperation, for this is the only way to run the thing, for the welfare of all concerned, and get away from the concentration of work to a few. However, this again opens up another avenue of argument and dispute. Industrial surgery is getting to be recognized as a definite specialty.

The fee schedule of this state is higher than in most states, and is, in my opinion, eminently fair, and I don't think that any of us will dispute this fact. While I am on this subject it might be well for us to know that there have been numerous instances of padding of our bills. This is unjust and dishonest, and we must cooperate with the Commission on this point. The ability of the Commission to follow our cases depends upon the promptness and accuracy of our reports. In my office I try to make it a religion to keep my reports accurate and send them in promptly. I think we will find that our insurance companies expect this and appreciate it. Our bills will also be paid much more promptly.

There has been a great deal of controversy and hard feeling shown by some injured workmen toward what they have felt was inadequate compensation on disabilities sustained. But as long as we have injuries and compensation, we shall have disputes and dissatisfaction. I think we will all agree that the Industrial Act has done much toward the betterment of working conditions and safeguarding of the workmen against loss and damage through these heretofore poor working conditions, thus eliminating lcts of nasty law suits.

There has been a great deal said about the right of an injured workman to choose his own doctor. In discussing this phase, we may cite that part of the law concerning this. The law states that the Industrial Commission, as carriers, or other insurance organizations as carriers, agree to furnish medical and hospital care to the injured workman. This makes it as broad as it is long. It does not tell you that you may choose your own doctor, nor does it specify that they are to select the doctor. So we must interpret it literally, thus giving him the privilege to choose if he insists upon it. However, we must safeguard the carriers by seeing to it that only qualified men are available to render such service.

Again, in closing, let me stress the importance of close and adequate cooperation of the medical fraternity with our Commission. I think it most important that our Commission be rendered free of

all political taint, should there be any present. It should be a non-political organization.

I should like Mr. Clingan to clear up in my mind a question which keeps coming to me. I hear that, at the site of the Boulder Canyon Dam, on the Arizona side, where money is being paid to Arizona for insurance protection, these injured wrokmen are being sent, in many instances at least, to California for care, and that deals are being made, in at least some of these instances, with privately employed doctors and private institutions, such as the Southern Pacific Hospital.

I have enjoyed Mr. Clingan's paper immensely, and feel that all of us undoubtedly have a much clearer conception of the workings of the Commission, and also of their many difficult problems. I do not believe in destructive criticism, but rather feel that constructive criticism is good and healthy for us all, and that we should all pitch in and clean our own house, do our part in cooperating with the Commission, then we can demand and get impartial treatment and satisfaction. Then we hope to have everybody happy.

DR. R. D. KENNEDY (Globe): There is another phase of this problem: that of the honesty of the employer, when he has one of a few men injured. For instance, I was called one night to see a man who was hurt as he was hurrying home to get his house ready because his wife was coming home. A few days later he came in with a statement from his employer that he fell off a ladder while at work. And again, a man came in with a boil on his hand, declaring to me that he got a sliver in there while at work and that was the cause of the trouble. I had no way of proving that there had been no sliver there, but the boil looked like a great many others which were not caused in this way.

MR. CLINGAN: The doctors can be indifinitely helpful in this connection, Dr. Kennedy. surance may cost an employer \$50.00 or \$60.00 a year and over a number of years he may have no accidents. He feels that he is not getting his money's worth, not appreciating that his experience is not broad enough to have entitled him to an accident and that any accident, in anywise serious, would probably cost considerably in excess of his total payments theretofore. Many of the smaller employers consequently "put in" with their employees in the event of some non-compensable injury, and endeavor to secure compensation. They short-sightedly thereby increase their own rates, as rates are and must be predicated on cost of injuries.

On the other hand, there are many employers who are not "compensation conscious." They believe that, unless the injury can be definitely traced to the negligence of the employer himself, the employee should carry the load. They do not appreciate that, under the compensation laws, and properly, industry must be charged for the cost of its mutilation to the human machine. Such employer has but little conception of the objectives of the compensation law and its functioning.

DR. N. C. BLEDSOE (Tucson): As an industrial surgeon in this state for twenty-seven and one-half years, I know of the care that injured men receive. The surgeon's one aim has been to get the man well, to rehabilitate him so that he can get back to work. The Commission has been most liberal in its help. Previous to the existence of the Workmen's Compensation Law, there were many cases of injustice. The law in Arizona is the most liberal compensation law that there is in the United States. The men are employing its results here more than workmen in any other part of the United States. The Commission does everything it can for the workingman, to rehabilitate him and make him again a useful citizen. I have found the Commission absolutely fair in all its dealings.

MR. CLINGAN (closing): I thank you, Dr. Patterson, for your courtesy, and suggest I may well withdraw my paper and substitute yours therefore. It covers the field admirably.

As regards the treatment of employees of the Six Companies; the Companies, in compliance with the provisions of the Compensation Law, are providing their own medical attention and have their own hospital in Boulder City. None of the men employed on the Arizona side live on the Arizona side, and, in fact, practically all of the employees of the Six Companies, whether working on the Arizona side or the Nevada side, live in Boulder City, and are carried to and from their work daily by the company. The Six Companies originally had a contract with a Las Vegas hospital but now have their own. All that the Industrial Commission may do is to insist that the men receive adequate and proper treatment. We have our own representative constantly at the dam to assure this fact.

#### RUPTURE OF THE PREGNANT UTERUS, IN TRIAL LABOR

## PREVIOUS CESAREAN SCAR INTACT REPORT OF A CASE

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(Read before the Forty-first Annual Meeting of the Arizona State Medical Association, held at Globe, Ariz., April 21-23, 1932).

Operative obstetrics is calling forth much adverse criticism from many of our best obstetricians and gynecologists. Their evaluation of morbidity and mortality statistics furnishes data worthy of the most serious consideration at this time by the entire medical profession, more particularly those practising obstetrics.

Of all the operative procedures, cesarean section probably receives the most censure. C. Jeff Miller, in an address in 1928, said that, "An operation designed as a life saving

measure has become a sort of a medical boomerang, carrying with it a mortality which, since it is so largely avoidable, is criminal rather than tragic."

It is not my purpose to attempt in any way a refutation of the arguments of those who have so ably presented the case against indiscriminate cesarean section. fort to curtail any operative procedure which "carries in its abuse death and invalidism" is most commendable. On the other hand there may be men who, like myself, facing similar problems, may be confronted with a situation at rare intervals wherein a cesarean section is the conscientious, if not the classic, obstetric indication. In such an event, this case report might be of interest, for it illustrates the desirability, as well as the necessity, for prenatal care in all cases. It establishes the dictum that trial labors in pregnancies following cesarean section should be supervised with meticulous care. It presents one case as an exception to the statement that, "by increasing the operative incidence in obstetrics, maternal mortalities have been materially raised—" (Polak and

It recounts an experience in which the old classic cesarean section scarcely averted an obstetric tragedy.

I shall ask your indulgence while I digress far enough into the history of American medicine to reveal certain fundamental factos which may in part explain the trend to the "operative furore" which has invaded obstetrics. Morbidity and mortality in cesarean section result largely from some form of infection in the uterine incision. After reading the editorial in the March 12, 1932, Journal of the American Medical Association, apropos of Paul de Kruif's proposed boycott for "any physician in whose practice there occurs a death from puerperal infection," I cannot resist the temptation to strike at some of our shortcomings.

Let us go back to 1911 when J. Whitridge Williams, professor of obstetrics, Johns Hopkins University, sought accurate information on medical education and the midwife problem in the United States. A questionnaire containing some fifty questions was sent to the professors in 120 medical

schools giving a full four-year course. Fortythree professors, representing schools in every section of the country, were good enough to reply. I will quote only a few deductions: "Most serious of all, that a large proportion (of the professors) admit that the average practitioner, through his lack of preparation for the practice of obstetrics, may do his patients as much harm as the much-maligned midwife. Several professors admit that they are not prepared to perform cesarean section. Consider that such a condition of affairs means that the professor is merely a man-midwife, who is unable to arry a complicated case of labor to its legitimate conclusion! Or, imagine the effect on a patient who places herself in the hands of a professor of obstetrics in a respectable medical school, when she is told that he can conduct the case satisfactorily if it is ended by the unaided efforts of nature, or merely requires some slight interference; but in case radical interference is demanded he will be obliged to refer her to a gynecologist or surgeon. Think of the impression such an admission must make on the student, who cannot be blamed for believing that obstetrics is a pursuit unworthy of broadly educated men, but is suitable only for midwives or physicians of mediocre intelligence. Most of them admit that their graduates are not competent to conduct operative labors, while several state that they deteriorate rapidly in technic after leaving the medical school."

As I contemplate this article. I wonder if it may not have been a whip which helped to lash the "professors" into taking the bit in their teeth, for after eighteen years we find another professor of obstetrics (Polak) stating, "In obstetrics teaching, what called progress has been largely along surgical lines. Some say that obstetrics has become a surgical specialty. To this we cannot subscribe. for the bulk of all deliveries are, and always will be, conducted by the general practitioner, and it is the clean practitioner, who practises aseptically and conservatively, who has the lowest morbidity and the smallest mortality. As we see it, much of the present-day mortality and morbidity is directly the result of the teach-

ings of some prominent obstetricians who have been busy inventing operative procedures to control the onset of labor, or shorten or eliminate the second stage of labor in all women at term; another cuts the perineum of every primipara, while still another does a section on every tenth woman and a version on the other nine. Most remarkable of all is the teaching of one of our leading obstetricians who classes all labor as pathologic and advocates rapid delivery with forceps through a cut pelvic floor as soon as the head has passed through the cervix, following this by manual removal of the placenta. It is stated that the routine use of solution of pituitary improves the mechanism of the third stage. The popularity of cesarean section has outgrown all bounds and it is being done for almost every complication of delivery, as well as for many of the complicating diseases of pregnancy. Recently we have been advised to do rapid extraction in breech cases as soon as dilatation is complete; while another professor induces labor with bags and advocates digital dila-Such teaching is bad teaching alike for expert or for novice, and when such advice is put into the hands of the general practitioner by men of reputation of whom he has heard through their publications, and for whom he has the respect that the reader often gives the unseen outhor, it becomes the underlying factor in maintaining the present relatively high obstetric morbidity and mortality rates."

Or, again, take Williams' criticism of DeLee's teaching concerning his prophylactic forceps operations, both of them among our ablest and most popular teachers of obstetrics, "DeLee takes a more radical position, as he believes that prolonged pressure of the fetal head against a more or less rigid perineum frequently results in serious injury to the cerebral tissues, and recommends the performance of what he designates as 'the prophylactic forceps operation.' In this procedure, as soon as the head rests firmly upon the pelvic floor and has begun to part the pillars of the levator an muscles, a deep lateral incision is made through the perineal and vaginal tissues, which extends into the levator an if the disproportion promises

fifteen cases in which the uterus was re-

to be great, following which forceps are applied. He considers that prompt intervention adds greatly to the safety of the child, relieves the patient from a considerable part of the strain incident to the second stage of labor, and leaves her genitalia in such condition that the occurrence of outlet relaxation in the future is reduced to a minimum. In his skilful hands, these objects are no doubt accomplished, but I am confident that the results would be disastrous were his suggestions generally adopted."

So we might continue ad infinitum, but let these opinions suffice; they are authoritative and representative. From them we deduce a serious lack of uniformity of indications and obstetric procedure among those who teach obstetrics. Standardization in obstetrics may be as undesirable as it is unattainable. Yet the present confusion calls for something! Shall we call it an obstetric code, to be evolved and subscribed to by those teaching and practising obstetrics?

Now let us return to our subject. "Once a cesarean section always a cesarean section." Williams savs that this is an exaggeration; DeLee is more conservative, stating that a decision cannot be reached until we know how many cesarean uteri rupture in subsequent labors. Considerable work has been done on the study of the scar in this muscular organ, with its mucous lining and its partial peritoneal covering. We will consider the immediate and remote conditions in the scar-infection in the uterine wound is the chief source of morbidity and mortality, although not always a precursor of a defective scar. The location of the incision, the suture material, method of suture, and infection from below, have all been blamed for bad results. Quoting King: "Many observers have noted at cesarean operations. which were the second undergone by the pa tient, thin cicatrices which might have ruptured had labor been permitted. Thus, Harror, at the New York Lying-in-Hospital, in fifty repeated cesarean sections, noted thin scars in four cases, partial rupture in two, and complete rupture in two. Van Leuwen found twenty thin scars reported in 117 collected cases in which the condition of the cicatrix was noted. Gamble states that, of

moved and in which definite information as to the former puerperium was available, the following points were noted: Of seven cases with previous febrile puerperal periods, no trace of the scar could be found in six instances, and it was only slightly thinned in one specimen. In eight cases in which there was no fever after previous operation, the scar could not be located in three specimens; while healing was good in three, fair in one, and poor in one. In our (King) series of ten second cesarean sections, the cicatrix was noted or recorded in five instances. These thin scars are the dangerous ones. It is universally conceded that a well-healed scar will stand the strain of subsequent labor. In fact, in this connection the term 'scar' is really a misnomer, as in such cases healing takes place by muscular regeneration across the gap, rather than by the formation of connective tissue." King, evaluating Holland's collection, records ninety-six patients who were allowed to test out the cicatrix with 18 ruptures, or 18.75 per and, applying the same analytical methods to Gamble's report, he obtained Holland's figures repre-5.5 per cent. sented twenty-six different hospitals; Gamble's, one well-organized clinic. As a working basis, then, we may assume that the incidence of rupture in repeated cesarean sections after the test of labor, will be somewhat between 5 and 18 per cent. Williams' figures are very much lower, 1 to 4 per cent; but I doubt if they represent the analytical scrutiny of King.

#### MORBIDITY IN CESAREAN SECTION

Polak' states: "Our present morbidity records are unreliable, for the average institution keeps the maternity patient only ten days. A few services have lengthened the puerperal stay to two weeks, and almost all accept and record as their standard of morbidity a temperature of 100.4° F. on two successive days not including the first 24 hours after delivery. Such a standard, without a follow-up, can give no adequate index of actual morbidity. We have repeatedly seen a temperature of 100.4° to 101° on one day, or on the third and eighth days, in women who were discharged afebrile because these tem-

peratures did not occur on two successive days; yet the same women have returned to the hospital with extensive exudates or with pelvic abscesses."

Lewis' reports morbidity on 887 cases of classical cesarean section done at the Cook County Hospital; 13.8 per cent had temperatures over 104°F., 24.1 per cent had temperatures from 104° to 102°, 45.8 per cent had temperatures from 102° to 100°, and 16.1 per cent had temperatures below 100° F.

Frequent causes of morbidity are acute dilatation of the stomach, peritonitis, ileus, uterine abscess, infection in the uterine scar, thrombosis of the uterine and pelvic veins. Polk notes that "there is a high morbidity even in the clean cesarean section, very much higher in fact than is common in operations for pelvic tumors such as fibromyomata and ovarian cysts. This is due to the presence of infective bacteria in the cavity of the puerperal uterus, which migrate from the vagina into the interior of the uterus, through the open cervix."

#### MORTALITY

Thirty-seven years ago, Luske stated that, "Until a very recent date the cesarean section was justly regarded as one of the most hazardous operations in surgery. Dr. Harris (1888) gathered with great industry the histories of 153 cases performed by the older methods in the United States, fifty-six of which, or nearly 37 per cent, ended in recovery. Under this showing, it will be seen that at best fully half of all cesarean operations ended fatally. The responsibility for these results was due, in the first place, to septic infections, the evils of which were especially experienced in hospital practice. and to the postponement of operation until death impended."

Whatever criticism there may be today of the furore operativus of obstetricians and general surgeons in relation to cesarean section, we have to admit a lessened mortality. As Mosher' very aptly said, "It is an established fact that the scope of any surgical procedure widens as the technic is perfected and as the morbidity and mortality are thereby reduced. Cesarean section is no exception to this rule."

Williams thinks the mortality figures are

close to 10 per cent for the whole United States. His rate in 349 operations, classified as conservative, low, and radical sections, gave a gross mortality of 3.4 per cent. Eliminating eight cases in which death was not due to operation, his rate was 1.7 per cent. Contrast these figures with those given by King from the Charity Hospital, New Orleans, "Where all of these patients (117) had had vaginal examinations or attempts at delivery before operation," and where maternal mortality was 13.6 per cent.

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C. Jeff Miller collected 9782 cases, from fifteen different sources, with an average maternal mortality of 7.36 per cent. He stated, "These figures have been collected casually from a casual reading of the literature."

Regardless of the many factors influencing mortality, there is one which I wish to repeat; it is the "time limit." Williams' words are axiomatic: "No matter how good the operator, or how perfect his technic, it appears that the mortality, even in apparently uninfected women, will be low only when the operation is done at an appointed time before the onset of labor or within a few hours after the first pains, and that it will increase progressively with every additional hour of delay." Holland's figures, based on 1953 sections in Great Britain (1911 to 1920), show an operation mortality before labor of 1.6 per cent, increasing to 14 per cent after the induction of labor, and to 27 per cent after attempts at delivery by forceps, and so forth.

#### CASE REPORT

Mrs. E. K., white, female, age 36, weight 98 lbs., height 62 inches, a twin, youngest of ten children, weight at birth, 4 lbs.

Family History: Father died at 72, old age; mother died at 71, kidney trouble; three sisters and one brother living and well; two brothers died in infancy; one brother was shot, age 57; one sister died at 22, of pneumonia following childbirth; one sister died at 3 months, of pneumonia following an attack of pertussis; husband living and well, weight 218 lbs., height 71 inches.

Menstrual History: Matured at age of 17, irregular, considerable dysmenorrhea.

Past History: Measles and pertussis in childhood, croup several times, influenza 1920; cystitis 1929, in early part of this pregnancy, was treated and cleared up.

Present Condition: Last menstruation, Jan. 23,

1929, had rather stormy pregnancy, with vomiting throughout entire gestation, but most in first six months. There was never any serious acidosis, albuminuria, or high blood pressure. During last months had slight edema of the ankles, but it was not traceable to kidneys. Admitted to hospital at 11:15 p. m. Oct. 22, 1929, in labor. Condition good for pregnancy at term. Labor pains good quality and rhythm, on admission.

She had had the usual prenatal care. Pelvic measurements: transverse, 26 cm.; external conjugate, 18 cm.; internal conjugate, 12½ cm.; true conjugate estimated 10 cm. Presentation right occipito-anterior, head remaining high at the inlet.

After six hours of hard labor the pains faded out and, on rectal examination, it was found that the head was floating at the inlet. After consultation, cesarean section was decided upon. Only rectal examinations were made.

Physical Examination: No evidence of any abnormalities; lungs had no lesion, respiratory sounds clear throughout; heart, no valvular lesion, no evidence of enlargement of the borders, rhythm normal, pulse 74 on admission to hospital; temperature, 98.4° F.; abdomen large, pregnant uterus with head high, floating at the superior strait. Catheter specimen of urine showed albumin 2 plus, and a few pus cells. Blood count: white cells, 8,550; hemoglobin 80 per cent.; polys, 73; slight anisocytosis.

Operation: In ether anesthesia; midline incision 21/2 inches above umbilicus to pubis; uterus delivered, towels holding intestines back; uterus incised high on fundus; child extracted feet first; (pre-delivery diagnosis of right occipito-anterior position confirmed); placenta extracted; manual compression of the uterus to control hemorrhage, also 1 c.c. obstetric pituitrin injected into uterine muscle. cision in uterus closed by three rows catgut sutures; No. 1 ten-day chromic for submucous and muscular rows; plain catgut for peritoneal surface; good contraction obtained. Abdominal incision closed by No. 1 plain catgut, double, to peritoneum, same to fascia; retention sutures cross-tied in pairs, four pairs used over gauze. Appendix and other organs not examined. Dermal to skin. Patient returned to room in good condition. Time of operation, 35 minutes; baby delivered in four minutes.

Baby: male, weighing 8 pounds—began to breathe as soon as delivered. Note: For a few moments during second stage of anesthesia, the mother was deeply cyanosed; the fetus which had been very "quiet" up to this time, was seen to gyrate rapidly, to kick rapidly and forcibly in the uterus for several seconds. When delivered, there was some frothy mucus in his mouth, but he required practically no resuscitation.

Convalescence: Temperature reached 101.4° at the end of the first twenty-four hours and again on the fourth day. There was a slight afternoon rise of temperature during her two weeks in hospital. She returned to her home on the fourteenth day after operation. Convalescence was satisfactory except for the rise of temperature noted. The baby

was placed at the breast on the fourth day. She regained strength rapidly and continued to nurse the baby for five months with some supplementary feeding.

Second Pregnancy: Fourteen months after first delivery by cesarean section, she became pregnant the second time. This gestation was less annoying than the first, with less vomiting and general aches and pain. She, however, complained of pain and soreness in the abdomen; its location tended upward as the pregnancy advanced. (See operative findings.) Careful prenatal care was given throughout and, in the last month, x-ray was taken, showing the fetal head at the brim. Careful pelvic measurements were again taken and, as these seemed ample, except the obstetric, which was very slightly less than the normal, it was decided after consultation to give her a trial labor with the patient in the hospital under careful supervision. Admitted to hospital Sept. 27, 1931, in labor at term. After six hours of labor, observing no progress and the head still floating at the inlet, consultation was obtained. Consultant's comment was as follows: "Find she is small frame, thin abdominal and uterine wall; constant pain with head not engaged; pregnancy at term; no progress in six hours of labor; danger of uterine rupture; recommend that cesarean section be done at once."

Pre-operative diagnosis: Dystocia continues after six hours of trial labor (previous cesarean section 23 months ago.)

Operation: Operation was begun with patient still in light ether anesthesia; midline incision to left of umbilicus beginning about three inches above umbilicus, carried down to within about two inches of pubes; skin, a little fat and fascia, no muscle encountered in the incision. On opening peritoneum, a blood clot about three inches long and three-quarters of an inch wide came through the incision. Incision enlarged, hand passed up over the fundus and in doing so a finger engaged in a rent in the uterus. Incision enlarged rapidly upward, uterus delivered and, under slightly increased pressure, the uterus being in tonic contraction, the rent at the fundus lengthened to about six inches, with the placenta herniating as the rupture widened. This rent began to the right of the median line, at least an inch and a half from previous scar, which was only a grey thickening in the peritoneal coat, and spread out towards the right side to about two inches below the round ligament insertion. The uterus was not incised, but the placenta delivered through the rupture, followed by the sac with the child, membranes then ruptured and child, male, delivered. Respirations began promptly. Maternal hemin pairs over gauze pads. Normal saline, 400 c.c., orrhage rather severe for a few seconds. Obstetric pituitrin injected into uterine muscle as the fetus was delivered. Child in left occipito-anterior position with head floating at the pubic rim. There was a band of adhesions from the first operation anchoring the transverse colon to the anterior of the uterus (see history of gestation). The rent in the uterus was sutured with plain catgut No. 1,

dcuble two rows, reinforced in several places; utcrine muscle was estimated to be about one-half the thickness that it was at the time of the first operation and two layers of suture material, instead of three, as in first operation, were used. The adhesion of the transverse colon to the uterus was clamped and cut and the colon liberated. Catgut No. 1 to peritoneum, double, second row of the same material to fascia; silkworm gut retention sutures was given during the operation, needles under both breasts. Patient placed in semi-Trendelenburg, after child was delivered, to lessen the possibility of shock. Time of operation 34 minutes, baby delivered in 3 minutes.

Note: The patient had a very hard contraction of the uterus while still in her room, just before bringing her down to the operating room. This contraction was very painful and may have been the beginning of the rupture found at operation. Further, the anesthetist noted that the uterus was in a condition of tonic contraction, i. e., no uterine pains after the patient entered the operating room, but a constant contraction of uterus. In retrospection, it is evident that a few more severe contractions, had they occurred, would doubtless have resulted in a fatal hemorrhage\* as the placenta was immediately under the rupture. The rupture at its nearest point was not closer than one and a half inches to the scar of the first cesarean section. Returned to her room, color good, pulse fair volume, rate 104.

Measurements of baby's head: Occipitomental diameter, 6¼ inches; bi-parietal, 4½ inches; occipitofrontal, 5¾ inches.

Convalescence: Temperature rose to 102° on second day after operation, and 101° on fourth day, normal thereafter. Satisfactory convalescence. Nursing baby at present, after six months.

\*King's case 1: "The patient was placed on the operating table as trouble was feared. Rupture of the scar occurred, and the patient died before the abdomen could be opened."

#### SUMMARY

That there has been no improvement in maternal mortality records in the United States in the past ten years (1929) should be a cause for serious reflection and resolve. Yet, with all our delinquencies, I believe that "At this time obstetric care in the United States for the vast majority of women is as good as, if not better than, in the majority of civiled countries."

Our experience does not corroborate the statement that "all the reviewed statistics show that from 90 to 95 per cent of all labors terminate spontaneously" (Polak and Clark).

Before practising the art, our obstetric conscience should have developed at least to the point of distinguishing between "meddlesome midwifery" and obstetric indications; then may our conscience be our guide.

Obstetrics is often emergency work. When suddenly confronted with intervention, whether manual or instrumental, the modern obstetric delivery room or operating room represents a haven of safety.

Obstetrics is a science as well as an art, demanding faithful obedience to all of its mandates. An obstetric code, universally accepted and practiced" is a consummation devoutly to be wished."

We believe that obstetric consultations should be held more frequently before labor, particularly when the prenatal study points to a probable dystocia.

The results of cesarean section must always be considered as immediate and remote, and the prognosis honestly and fairly stated on this basis.

The percentage of rupture in the scar of the low cesarean section (laparotrachelotomy) will probably equal that in the classic operation when the technic of the low operation is as generally mastered and practised.

#### REFERENCES

- 1. A General Consideration of Cesarean Section: Surg. Gynec. Obst. 48, No. 6, p. 745.
- 2. Medical Education and the Midwife Problem in the United States, J. Whitridge Williams, M. D., Baltimore; J.A.M.A. 58, No. 1, Jan. 6, 1912.
- 3. Puerperal Morbidity and Mortality, John Osborn Polak, assisted by Chester Clark. J.A.M.A. 93, p. 1436, No. 19, Nov., 9 1929.
- 4. Obstetrics, by J. Whitridge Williams, Ed. 6, 1930.
- 5. Cesarean Section at the Cook County Hospital for the Past Eleven Years, Henry F. Lewis, M. D. (Chicago). Surg. Gynec. Obst. 42, No. 6, June, 1926.
- 6. The Science and Art of Midwifery, by William Thompson Lusk. D. Appleton & Co., N. Y. 1893.
- 7. Cesarean Section, Indications and Limitations, by George Clark Mosher, A. M., M. D., F. A. C. S. Surg. Gynec. Obst. 14, No. 5, Nov. 1927.
- 8. Holland: The Results of a Collective Investigation into Cesarean Section Performed in Great Britain for the Years 1911 to 1920 Inclusive. J. Obst. & Gynec. Brit. Emp., London. 1921: 28, 358-446.
- 9. Journal of American Medical Association, March 12, 1932, Editorial.
  - 10. Low Cervical Cesarean Section (Laparotra-

chelotomy); Results in One Hundred and Forty-five Cases, J. B. DeLee. M. D., and E. L. Cornell. M. D., Chicago, J. A. M. A. 79, No. 2, July 8, 1922

- 11. Uterine Scars after Cervical Cesarean Section, J. P. Greenhill, M. D., and Benson Bloom, M. D., Chicago, J. A. M. A. 92, No. 1, Jan. 5, 1929.
- 12. The Present Status of Operative Obstetrics Referring to the Abuse of Cesarean Section, John Osborn Polak, M. Sc., M. D., and A. C. Beck, M. D., Brooklyn. Surg. Gynec. Obst. 34, No. 5, May, 1922.
- 13. Post-Cesarean Bursting of Abdominal Wounds; Report of Three Cases, David A. Horner, M. D., Chicago, J. A. M. A. 93, No. 15, Oct. 12, 1929.
- 14. Delayed Labor Caused by a Shortened or Short Umbilical Cord, John P. Gardiner, M. D., Toledo, Ohio. J. A. M. A. 98, No. 8, Feb. 20, 1932.
- 15. Analysis of the Obstetrical Work at Blodgett Memorial Hospital, Jan. 1, 1925, to Dec. 31, 1929, Paul W. Willitts, M. D., F. A. C. S., Grand Rapids, Mich. Bull. Amer. Coll. Surg. 16, No. 1, March, 1932.
- 16. A clinical and Anatomical Study of Repeated Cesarcan Section with Especial Reference to the Healing of the Cicatrix and to the Occurrence of Rupture Through It, O. T. Gamble. Bull. Johns Hopkins Hosp., 33, 93-106, March, 1922.
- 17. Labor in Elderly Primipara; Factors in Prognosis, Margaret Schulze, M. D., San Francisco. J. A. M. A. 93, No. 11, Sept. 14, 1929.

#### DISCUSSION

DR. F. B. SHARP (Phoenix): Doctor Yount is to be complimented upon the presentation of a very interesting case and the reading of an excellent paper. The case presented varies from the usual order in that the uterine scar of a previous classic cesarean remained intact while the organ ruptured elsewhere. Obviously, the merits of the case should not initiate a discussion of rupture of a previous cesarean scar, in spite of the relative frequency of such an emergency.

Consideration of Doctor Yount's case should review for us several phases of obstetric principle and thought, even though widely separated. Rupture of the lower uterine segment and a knowledge of its production, emphasizes the mechanism of cervical effacement and dilatation, and later retraction upward by the action of the longitudinal muscle fibers of the corpus. Incarceration of the cervix between the head and pelvis, in cases of disproportion and the persistence of hard contractions, throws a terrific strain upon the passive, thinning-out lower segment. A prolonged second stage, even with complete retraction of the cervix, may lead to rupture. In the same thought, we can not forget the importance of anomalous presentations and the consequent greater strain upon a particular part of the lower segment. Especially is this true when there is weakening of the wall by greater invasion than normal by fetal elements, with rupture at the placental site.

The subsequent welfare of this patient amply demonstrates the advantage to the parturient woman by observation in a well-equipped hospital whenever possible, and by a conscientious, competent physician. I have long insisted that a patient in labor should be continuously attended by her physician, or at least by a nurse under his supervision and trained to recognize early a pathologic trend.

Finally, there is again the reminder that the multipara is as frequently beset by danger, or more so, than the primipara. Even without the scar of a previous cesarean, and with the history of easy labors, there is more than the possibility of serious trouble, due to increasing size of her babies, anomalous presentations, or of tumultuous and precipitate labor, the extensive tearing through and beyond of old cervical and perineal lacerations, lessened elasticity due to increasing connective tissue elements, homorrhage, toxemia, and numerous other irregularities.

Of the four cases of uterine rupture which have come under our observation during the past three years, all were multiparas. Seen in consultation were two ruptures of previous classic cesarean scars, one at eight months and occurring without premonitory symptoms, one after twelve hours of hard labor, the physician in charge not having inquired as to the nature of the abdominal scar, and a third rupture in a woman with a pendulous abdomen. In this case, of course, the rupture occurred posteriorly. The fourth case was in our own practice, in a woman who gave a history of rapid deliveries with three or four hard pains. She presented upon examination a badly scarred cervix, and at delivery ruptured the lower segment through a low-lying placental site, at the third pain, in addition to spontaneously amputating about half of the cervical ring. Hence, it should be difficult for us to view the the parturient woman with anything but the utmest interest.

- DR. C. E. IRVIN (Miami): This matter of the "obstetric conscience" is of vital importance. The infant mortality alone is sufficient to show the type of man handling any particular case. In order that conditions may be improved, it is necessary that women and their husbands learn the importance of having expert care at this time and be willing to pay fees commensurate with the service rendered.
- DR. C. R. SWACKHAMER (Superior): I wish to express my deep appreciation of this paper of Dr. Yount's. It is another of his splendid efforts to keep the developments in the practice of obstetrics before the attention of the State Association.
- DR. YOUNT (closing): There are two points of special interest I wish to repeat: first, we actually witnessed a uterus in process of rupture; second, the rupture was distal to the scar of the previous cesarean section with hernia placentae; however, the whole uterus appeared thinner, even with the uterus well contracted (during suturing), than it did at first section.

#### CASE REPORTS

- 1. Adenocarcinoma of the Head of the Pancreas.
  - 2. Diabetic Coma.

JAMES J. GORMAN, M. D. El Paso, Texas

(Presented before the El Paso City-County Medical Society, March 28, 1932.)

The purpose of this discussion is to present two cases of pancreatic pathology. The first, a case of adenocarcinoma of the head of the pancreas, presenting rather a typical chain of symptoms and findings of this condition. The second, a case of diabetic coma, presenting symptoms, though not uncommon, still not encountered too frequently to be interesting and to be reviewed.

CASE H-1-714. Female, age 63. Examined Feb. 1, 1932. Chief complaint: jaundice.

Present Illness. Onset about January 10th, with inability to digest her food. The following day she developed a severe pain in the epigastrium, which was severe and continuous for about one week, and has continued until the present, but, in general, not as severe, though there is a dull aching present at all times. When the pain is worse there is radiation to the back and upward to the right shoulder. Relieved somewhat by pressure applied to her back. She was awakened on the night of Jan. 31 with a severe pain which lasted about two hours. She obtains slight relief from food, which lasts about fifteen minutes. After that the pain is aggravated. Jaundice developed Jan. 17 and has grown progressively worse. During the first week of illness the patient had about one degree of fever and her pulse was very rapid, evidenced by palpitation in the epigastrium. Gas comes on shortly after meals and she has noticed transient generalized pain over the abdomen, attributed to gas. when present appearing about 2 a. m. She has a "winding feeling" passing upward beneath the sternum. relieved by belching if she takes soda. The day following the appearance of jaundice, she became nauseated and vomited undigested food. The stools have been clay colored and the urine of an extremely dark orange color. Only once has there been a slight color to the stools, but the urine has remained constantly dark. She has an empty feeling in the epigastrium, which she ascribes to inability to digest her food, and she has become very weak. Loss in weight has amounted to several pounds, but exact amount not known. All foods seem to disagree except beef juice. especially is this true of milk and fruit juices. Has always had a delicate stomach, which has necessitated close adherence to a diet regulated by herself. This condition has been noticeably affected by nervousness. Beans, peas, salads, raisins, prunes, apples, pastries, fresh tomatoes, bread, and coffee, have disagreed for a considerable time.

In October, 1931, the patient was advised to have

her teeth repaired, but the grinding caused her to become very sick and nervous. After three attempts she discontinued further attention. In December. 1931, she had a severe attack of food poisoning lasting three days, which began with a terrific headache, pain in the back, and blisters in her mouth. Similar symptoms were noted by others who ate the same food.

General History. Patient seldom has a headache except on waking during the summer months. Notices a soreness of the eyes frequently. Tonsils have been removed. Teeth are known to be bad. Has not felt well since two teeth were extracted, with great difficulty, in the fall of 1931. Has had chronic inactive pulmonary tuberculosis for many years. Last examination in 1929. Has considerable cough and expectoration in the mornings. Is of highly nervous temperament.

Past History. Irrelevant except for pulmonary tuberculosis, cervical gland tuberculosis, and influenza

Physical Examination. Patient is fairly well developed and nourished. The skin is very deeply jaundiced. Sclera shows a very deep greenish-yellow discoloration. Pupils react satisfactorily. Several teeth missing, others appear bad, several filled, and has a poor chewing surface. Heart sounds are rapid. Lungs: Dullness over right upper. Expiration is very harsh, and of tubular quality. Numerous sibilant and sonorous rales heard over the right upper. Blood Pressure: 156/94. Abdomen is about level with costal margin, and with respiration there is a visible mass noted in the right upper quadrant, held somewhat tense throughout. The liver edge is palpable about three finger-breadths below the costal margin, and is tender. There is a second mass palrable, apparently soft, but not tender. in the region of the gallbladder. Just to the right and below the pylorus, there is a stony hard mass about the size of a lemon, which seems to be irregular and not tender.

Laboratory Examination. Temperature, 99.0; pulse. 82; white blood count, 10,900; polys, 74; tr., 3; L. M.. 9; S. L., 14. Urine exam.: sp. gr., 1,030; alb., slight trace; sugar. negative. Dark, amber color. Stool, clay colored. Gastric exam: (45 min. exam.) Free Hcl. 36; comb. acids. 16; total acids, 52. No bile obtained by biliary drainage.

X-ray of stomach (Dr. George Turner). The stomach is normal in size and outline. There are no filling defects. It is hyper-motile and empties rapidly. The cap is large, but shows no defect. The stomach is disp'aced to the left because of the liver. The gallbladder is very large, and casts a shadow. There is no evidence of stones. Eighteen hours after taking the meal, a large part remains in the small bowel. The cecum is normal in position and outline. The appendix was not visualized. Cecum is freely movable and not tender to manipulation.

Diagnosis: Carcinoma of the head of the pancreas.

Patient was advised as to surgical intervention being the only possible treatment. Dr. R. L. Ramey and Dr. E. A. Duncan, examining the patient in consultation, likewise advised operation, and the patient was referred to Dr. Ramey for operative procedure. On opening the abdomen, the gallbladder presented itself of extreme size. There was no apparent involvmeent of the liver, but it was enlarged. The common duct was several times its normal diameter. Complete examination of the cystic duct was not entirely satisfactory. There was a hard mass at the region of the head of the pancreas. Owing to the poor condition of the patient, external drainage of the gallbladder was instituted, with intention of performing secondary operation of cholecystogastrostomy or enterostomy at a later date.

Two days following the operation the jaundice increased, but on the third and fourth days stools were liquid and of a yellow color; however, the urine remained dark. The patient's course continued unsatisfactory and she expired on the ninth day following the operation. Complete postmortem was not obtained, but permission was obtained for removal of the pancreas by Dr. McBride, and it was delivered to Dr. Waite for examination.

Pathological Report. Pancreas was considerably thickened about the head from induration and scarring. Microscopic examination of a section taken from the indurated area showed a new growth made up of adenomatous tissue invading the surrounding structures.

Pathological Diagnosis: Adenocarcinoma of the head of the pancreas.

#### DISCUSSION

In a recent report by Stillman of twentytwo cases of cancer of the pancreas admitted to Roosevelt Hospital from 1918 to 1928, out of a total admission of 57,336, he gives the age incidence as mostly from fifty to sixty-seven, duration of condition six months or less, often only a few weeks. Loss of weight appeared in 79 per cent of the cases, pain in 73 per cent, jaundice in 63 per cent, weakness in 61 per cent, a palpable mass in one-third of the cases, and other symptoms less frequently. I. J. Walker reports fifteen cases encountered in twenty-two months at the Boston City Hospital, with average age of 58 and duratoin of disease four and a half months.

The symptom of pain varies as to the location of the disease, and is regarded as being the result of pressure on the celiac plexus or on the mesentery direct. It is, therefore, frequently absent or insignificant in involvement of the head, but, with involvement of the body, is severe to the point of agonizing, with radiation to the back, between the shoulder blades, and it is uninfluenced by

food, but may be associated with vomiting and fullness in the stomach.

X-ray findings are somewhat in dispute. In his series of cases, Walker reported the x-ray of no value. In his discussion of Elmer Hess's case, to be referred to later, J. R. Carty states that a tumor or mass within the loop of the duodenmum tends to expand the later. This is suggestive of a growing tumor mass within the duodenal loop. This may be detected by measuring the vertical and horizental diameters on the roentgenogram. Stillman reported suggestive x-ray findings in eight out of his twenty-two cases —evidenced by defects of pyloric filling extragastric, a widened duodenal arch and stasis of the duodenum. Recent articles by Archie D. Carr and J. C., Yaskin draw attention to various nervous manifestations noted in this type of case. Carr reported his own and the cases of others showing symptoms of hypoglycemia, occurring in cases of adeno and carcinoma of the pancreas, such as restlessness, anxiety, stupor, convulsions, hemi-paresis with slurring speech, stupor, confusion, diplopia, and automatic behavior. Yaskin, reporting on four instances of carcinoma of the pancreas of previously healthy persons, notes the symptoms of depression with crying spells, anxiety, insomnia, anorexia, loss of weight, and weakness without feeling of unreality, and other disturbances of perception, memory, and judgment; which symptoms antedated any definite G. I. symptoms and physical findings, from three to eight months.

The differential diagnosis with chronic pancreatitis is very difficult and is frequently not made even on the operating table, justifying, at times, what might be considered as otherwise unnecessary surgery. Elmer Hess, in reporting a case of adenocarcinoma of the pancreas mistaken for a calcified cyst in the lower pole of a right ectopic kidney, concludes that a tumor in the head of the pancreas can be freely movable without any G. I. symptoms and that the head of the pancreas may be freely movable despite its normal fixation.

Pathologically benign tumors are relatively frequent. Primary carcinoma is the most frequent tumor of the pancreas. Involve-

ment is reported as occurring in 60 or 80 per cent; of the body, moderately frequently, and rarely of the tail. Metastases occur principally to the regional lymph nodes and, in a large percentage of the cases, to the liver. Secondary carcinoma is thought to be uncommon. Saracoma is rare.

There is practically nothing to be done in the way of treatment except alleviative surgical procedure. It is the consensus of opinion that continuous external biliary drainage is not successful, the operation of choice being anastomosis of the gallbladder to either the stomach or the duodenum.

CASE H-1-316. Female, age 20, examined Oct. 17. 1931. Chief complaint: Extremely severe pain in the upper abdomen.

Present Illness: Patient has been under treatment for diabetes since 1926. She has been very careless about her diet during the previous month and has been taking 20 units of insulin three times daily. On October 16th, while enroute from San Francisco. she broke her syringe and missed at least three doses of insulin, but had limited her diet to liquids. About 9 a. m. on the morning of the 17th, she began feeling badly. She had a severe headache, her vision became dimmed, and blurring was present. She borrowed a regular hypodermic syringe and injected some insulin, but did not know how much. About 11 a. m. she developed a very severe rain in the upper abdomen, became extremely distended, and vomited. The pain was so severe that it caused her to cry out as it appeared in spasms. She has been in coma upon two occasions and has had numerous insulin shocks. Adherence to her diet is not constant.

General History. Occasional attacks of indigestion. Onset of menstruation at the age of thirteen and a half, which was regular until she developed diabetes. Since then she has menstruated only about once a year.

Patient was examined about 1 p. m. She looks acutely ill, is well developed and nourished. Cheeks are flushed, slight cyanosis of the lips and finger nails. Pupils react normally. She is definitely disorientated, and semi-stuporous. Respirations are very rapid, labored, and shallow, and she emits frequent grunts. Lungs are clear. Heart sounds are rapid, somewhat distant, and the rate is 136. Abdomen is well above the costal margin, showing distention. There is marked rigidity, almost board-like, throughout. No visible peristalsis. Dull tympany throughout, with dullness most marked over the epigastrium. There is moderate tenderness over the region of the epigastrium. Liver dullness not obliterated.

Laboratory Examination. Temp. 99; pulse 136. Catheter specimen of urine: sugar, 4 plus, reduces Benedict's solution to a copper-red color; acetone, 4 plus. Blood-sugar, 740 mgms. White blood cells, 34-600; P. 82; L. M. 3 per cent; S. L. 12 per cent, B. 3 per cent.

Impression: Diabetic coma.

Treatment. The usual supportive measures were instituted and insulin was given. After ten hours, urine was free of both sugar and acetone. The pulse gradually diminished and became normal the following afternoon. Temperature became normal the following morning. Since the patient was leaving the city, she was placed on a maintenance diet with insulin, and discharged from the hospital on the third day after admission. Two reports concerning her condition have been received, both to the effect that she was progressing satisfactorily.

#### DISCUSSION

The occurrence of the severe abdominal pain in this case, with the abdominal findings, temperatures, leukocytosis, and marked rapidity of the pulse, would have suggested careful consideration of an abdominal lesion. and it is this type of case, without previous history of diabetes, that justifies a complete laboratory study in any suspicious abdominal emergency. This was rendered somewhat simple in this particular case by the previous history of diabetes. The additional history of a previously administered unmeasured dose of insulin brought to the fore the consideration of another possible serious complication, hypo-glycemia. The marked elevation of the blood-sugar curve again brings to our attention the lack of relationship between the height of the sugar curve and the consciousnes of the patient. Another symptom which I wish to mention and which is sometimes lost sight of in diabetic coma, is the bleeding of the gastric mucosa, with consequent vomiting of coffe-ground material, such as I encountered in a recent patient. Early in the case this may be confused with gastro-intestinal pathology. Just a word may be said, that there is no emergency, medical or surgical, which requires more careful, painstaking, and continuous attention than the diabetic coma

#### PUBLIC HEALTH NOTES

J. ROSSLYN EARP, Dr. P. H.
Director New Mexico Bureau of Public Health
ANNUAL CONFERENCE NEW MEXICO
PUBLIC HEALTH ASSOCIATION

Seven county health officers and twentyeight public health nurses registered at the annual meeting of the New Mexico Public Health Association, which was held this year at Carlsbad. One of the drawbacks of parttime public health service is the difficulty which divided responsibility creates for a fu'l attendance at such events. Perhaps the greatest benefit that can come from such a conference is the help that health officers can give to each other in solving the problems common to us all. We missed particularly some men who have been doing notable work in immunization during the past year. Those who were present were able to agree on a few conclusions. One of them is that rractically ro cases of syphilis in this state ever stav with their physician until they are cured. This situation certainly constitutes a challenge to the educational forces of public health.

A long-distance message reached us at Carlsbad to the effect that a woman who had been jailed for refusing to have her children vaccinated was to be conditionally pardoned by Governor Seligman. The condition was that the woman should leave the state and that, if she returned to New Mexico, she should serve out the remainder of her sentence. No protests were heard against this wise decision. We are not vindictive and the lady could have avoided conviction by leaving the state in the first place.

#### SCARLET FEVER IMMUNIZATION

We are sometimes asked about the present status of active immunization against scarlet fever. We believe in conservative judgment on new methods, whether in preventive or curative medicine, but some doctors are altogether too skeptical of the possibilties of preventing scarlet fever by toxin injections. There is no doubt that it can be done, Failures that have been reported must be attributed to inadequate dosage with the preventive toxin or to some other deficiency of technic. Here is just one example of re-

cent successful experience from many that might be quoted: In Washington county, Mary'and, scarlet fever has been an important problem, causing, in the last three years, more deaths than either diphtheria or typhoid fever. Recently, the school children were Dick tested, the degree of susceptibility was carefully recorded, and the majority of the susceptible were immunized by the five-dose treatment. Retests two weeks after the last dose showed 95 per cent of these children to be immune. Now for subsequent experience. Of 85 children who refused Dick test and toxin, five subsequently contracted scarlet fever. Among 276 Dicknegative children, no case developed. Among 179 completely immunized children, no case developed. Among 60 Dick-positive children who received no immunization, fifteen contracted the disease within three months of the test.

It is true that to give two skin tests and five immunizing doses is a lot of work. It is true that reactions do occur which are unpleasant, even if not dangerous. It is true that experiments at the National Institute of Health give promise of a greatly improved toxin, detoxified with formalin, in the near future.

It is also true that we have now a method of developing active immunity in a surprisingly short time, which, for institutional work or in the presence of epidemic scarlet fever, should most certainly not be overlooked.

1. Bulletin Maryland State Department of Hea'th. Vo'. 2, No. 3, 1931, page 35.

#### CASE OF ATYPICAL ANEMIA

W. WARNER WATKINS ORVILLE H. BROWN, M. D. Phoenix, Ariz.

(Case No. 13321, Case Records of Massachusetts General Hospital, as published in Boston Med. & Surg. Jeur., August 11, 1927, page 236.)

#### Case History

A Canadian of fifty-four, a spreader in an artificial leather factory, entered the hospital September 16 complaining of intermittent bleeding from the gums.

The symptom began a year before admission. During the winter he began to have cough with sputum, worse at night, keeping him awake and choking him. The sputum was while and frothy, foul in odor and disagreeable in taste. The cough gradually decreased during the summer, while the sputum steadily increased. He became more and more shortwinded until in July he had to rest in

bed and could not climb even one flight of stairs without great dyspnea and fatigue. Since July his feet and legs had been swollen and occasionally stiff and painful and his eyelids puffy. Since that time he had been drinking sixteen to eighteen glasses a day and urinating a dozen times each day and night. For three months he had been troubled with gas. Since July he had had sores on his neck, at the corner of his mouth and on his right index finger said by a physician to be due to "bad blood." For the past six weeks he had had continual oozing of blood from his gums, causing constant spitting. During the past six days he had had four treatments with ultraviolet rays over his chest, front and back. He had had no loss of appetite or weight.

His family history shows nothing significant of familial disease so far as he knew. His wife had never been pregnant in fourteen years of marriage. He took some alcohol before prohibition. His general health had been good except for influenza during the epidemic and a touch of bronchitis three years before admission. He had had no other illnesses. Ten years before admission his back and left eye were burned by acid, leaving the vision impaired.

For seven years he had operated the spreading machine in a leather factory and had used mixtures which contained banana oil, gun cotton, benzene and many other chemicals unknown to him. He was the only person who was ill from bleeding,

though many oth rs had been poisoned.

Clinical examination showed a well nourished man with puffy eyelids, coughing and spitting thin bloody mucus. Mucous membranes pale. Skin seemed atrophic. Gums spongy and oozing. Many teeth missing, the remaining ones blood stained. Petrchial hemorrhages on palate. Scars on right arm, right ankle and dersum of left foot. Lesion the size of a quarter dollar on the right index finger. Questionable enlargement of the left epitrocchlear glands. Throat edematous. Chest barrel shaped. Expansion poor. Lungs hyperresonant. Diminished breath sounds. Location of apex impulse of the heart not recorded. No enlargement to percussion or other abnormalities. Blood pressure 110/55 to 128 23 to 148/50. Artery walls slightly thickened. Liver edge palpable 6 centimeters below the right costal margin in the mammary line. Dome at 6th interspace. Prostate tender. Ankl's puffy; no pitting. Knee-jerks not obtained. Pupils equal, regular, rebounded on reacting to light. Left fundus obscured by corneal opacity. Right showed prominent choroidal vessels with pale white disc and exaggerated cupping.

Urine 20 to 80 ounces, alkaline at four of five examinations, specific gravity 1.023 to 1.015, no bumin or sugar, occasional red cells at one of five sediment examinations, about 5 leukocytes per field at another. Renal function 40 per cent. Blood: 3,000 to 2,000 leukocytes, 16 to 17 polynuclears, 52 to 38 per cent lymphocytes, 8 to 10 per cent mononuclears, 4 to 5 per cent eosinophils, 20 to 15 per cent basophils, hemoglobin 50 to 35 per cent., reds 1,940,000 at entrance, 2,350,000 after transfusion. 1.688,000 two days before death. Entrance smear showed stippling, polychromatophilia, rare microcytes and macrocytes, large filled oval forms, tailed forms and many achromic cells, a few normoblasts, few normal looking cells; two mye oblasts or lymphoblasts were seen. Platelets much reduced. Bleeding time over 30 minutes at entrance, afterwards 35, 12. 40 6 minutes (after transfusion), 1 hour. Reticulated cells 1½ per cent. to 6 per cent. October 12. Price Jones measurements of red blood cells September 18, median 7.54 microns, dispersion 1.32 microns, characteristic of slight secondary anemia. Clotting time 7 to 14 minutes. No clot retraction after 48 hours. Icterus index could not be read September 16 and 18; 8 September 22. Fasting contents of storiach: 8 cubic centimeters mucous appearing white cloudy material, no sediment, free acid 4, total acid 6, guaiac negative. Test meal: 16 cubic centimeters mucous appearing blood streaked brown material with no sediment, occasional epithelial cells, frequent red cells, free acid 6, total acid 10, guaiac strongly positive. Stools: guaiac positive at 3 of 11 examinations; no macroscopic blood. Sputum white and bloody at the single examination. No tubercle bacilli. A few leukocytes, predominant organism a Gram-positive encapsulated diplococcus. Gram-negative diplococci also present in rather large numbers. A few Gram-negative bacilli. Blood culture negative. Wess-rmann negative.

X-ray examination with a barium enema showed nothing indicative of malignancy. The colon filled with some difficulty owing to a rather marked degree of spasticity. The cecum contained a large amount of gas and could not be completely filled. Examination with a barium meal showed the esophagus and stemach normal. The duodenum filled with difficulty, and at no time was it completely filled. At the six-hour examination the stomach was empty. The head of the meal was in the cecum. The cecum was normal. Re-examination with atropin was recommended. The diaphragms were in the normal position. There was no fluoroscopic note as to excursion. There was some thickening of the hilus glands. The lung fields and apices were essentially clear. The skull and long bones were negative. There was no evidence of mediastinal tumor or of malignancy. Another examination of the chest the following day confirmed these findings. Portable plates a week later were rather unsatisfactory, but as far as could be determined there had been no change in the chest since the last observation.

Temperature for the first week 98.6° to 101.5'; afterwards only three times below 101°, maximum 105.7°. Pulso 80 to 145. Respirations 20 to 48 with a terminal increase to 67.

September 17 examination showed a few purpuric spots about the axillae and on the soft palate, ecchymosis on the right knee, the left lung dull, with decreased voice and breath sounds. The spleen was easily palpable. Continuous with the liver and descending on respiration he found an ill-defined, irregular, doughy mass.

September 23 a biopsy was done, the removal of

September 23 a biopsy was done, the removal of a small fragment of a rib under local novocain. The pathologist reported that the microscopic sections were not suitable for diagnosis. Following the biopsy there was elevation of temperature and pulse. September 24 650 cubic centimeters of blood was

transfused.

September 27 and 28 in examination of six coverslip smears 112 leukocytes were found. Of these 12 per cent. were possible lymphocytes of medium and large size, slightly atypical. 58 per cent. wer neutrophilic cells; polynuclears 12 per cent., metamyelocytes 7, myelocytes 12, premyelocytes 6, myeloblasts 18, unclassified 4.—as nearly as these atypical cells could be classified. The remaining leukocytes contained hasophilic large granules, i. e., were mast cells. In smears made September 29 stippling and basophilia, diffuse and punctate, were common. Nucleated red cells could be found. Naked pyknotic nuclei were found not infrequently.

September 29 400 cubic contimeters of blood was transfused and October 3 650 cubic centimeters. The patient went downhill steadily. The bleeding from the gum stopped for three or four days after each transfusion, then recommenced. October 8 700 cubic contimeters of blood was transfused. The temperature rose to 104.5°. October 12 450 cubic centimeters of blood was transfused. The tempera-

(Continued on page 266)

## Southwestern Medicine

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#### THE NEW MEXICO MEDICAL SOCIETY, NOTES OF THE SEMI-CENTENNIAL SESSION

Santa Fe, N. M., May 19-21, 1932

The large registration and attendance was surprising to the officers of the Society, and extremely gratifying and flattering to the members of the Santa Fe County Society, for, despite the excellent program which had been arranged by the entertaining component Society, it was feared that business conditions would greatly curtail the number of visiting physicians. As it was, an even hundred registered for the Fiftieth Annual Session. An interesting commentary is a quotation from the July, 1924. number of SOUTHWESTERN MEDICINE, on the For'y-Second Annual Session of the Society at Santa Fe, in May, 1924, "Seventy-five were registered as being among those present-not a bad showing in a year when financial conditions have been anything but good."

As Governor Seligman stressed, in his address of welcome, what could be more fitting than to hold the semi-certennial session of the Society in the ancient and historic capital city of the State? Santa Fe responded with beautiful weather, for the most part, which, of course, greatly enhanced its natural loveliness.

The laily turned out in large numbers to hear Dr. Sansum's lecture on "Treatment of the Underweight, Indigestion, and Allergy," at the Thursday night session, and then came right back in the morning to willness the movies and listen to the symposium on Cancer, as portrayed by Dr. A. Soiland (Los Angeles), Dr. W. S. Lemon (Rochester, Minn.), and Dr. C. G. Toland (Los Angeles).

The visit to the Laboratory of Anthropology was delightfu', the members and their ladies being especially pleased with the wonderful exhibits of pottery and other specimens, and the hospitalities extended by Director and Mrs. Nusbaum.

The dinner dance at the La Fonda was thorough-

ly enjoyed by those present, dancing being participated in until a late hour. The fancy Spanish and Indian dances by natives in costume, sponsored by the hotel management, were highly attractive and entertaining.

The election of officers resulted in:

President-Elect-Dr. H. A. Ingalls, Roswell.

Vice-President—Dr. C. F. Milligan, Clayton.

Secretary-Treasurer—Dr. L. B. Cohenour, Albuquerque (re-clected).

Councilors, three years—Dr. C. B. Elliott, Raton, and Dr. R. O. Brown, Santa Fe.

Delegate to A. M. A. for years 1933-1934—Dr. H. A. Miller, Clovis.

Alternate-Dr. J. W. Board, Clovis.

Delegate to Texas State Meeting—Dr. H. A. Ingalls, Roswell.

Delegate to Colorado State Meeting—Dr. T. P. Martin, Taos.

Delegate to Arizona State Meeting—Dr. G. T. Colvard, Deming.

Meeting place for 1933: Reswell, N. M.

Important business transacted:

- (1) Appointment of Committee composed of Drs. R. H. Pousma (Rehoboth), R. O. Brown (Santa Fe), and J. R. Earp (Santa Fe), to deal with the problem of providing medical attention in the small, isolated and rural communities.
- (2) Amendment to By-Laws, Section 3, Chapter 8—striking out the words, "It shall represent the Society," and substituting in place thereof the words, "It shall assist the Council."
- (3) Amendment to By-Laws, Chapter 7—add Section 6, as follows: "The Council shall represent the Society in securing and enforcing legislation in the interest of public health and scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall strive to organize professional influence so as to promote the general good of the community in local, state, and national affairs and elections."

By these amendments the Council will be enabled

to deal with public-health problems and legislation insofar as it pertains to looking out for the interests of the medical profession and the public.

The follownig resolutions were adopted:

- (1) For the appropriation of \$500 for the use of the Council, to be expended as it may deem necessary during the ensuing twelve months in the interest of legislation pertaining to public health and scientific medicine, and to pay the expenses of holding special meetings in the the interests of the Society with request that at least one special meeting be held during the 1933 session of the Legislature to consider such matters and take such action as may be necessary.
- (2) That the New Mexico Medical Society notes with regret the passing from this life of the following: Dr. Jesse G. Holmes, Alamogordo; Dr. Daniel H. Lewis, Albuquerque; Dr. E. D. McKinley, Alamogordo; Dr. J. O. Hatcher, Deming.
- (3) That thanks be extended to the Governor of New Mexico, the Mayor of Santa Fe, the Santa Fe County Medical Society, the Program Committee, the Entertainment Committee, the Committee on Arrangements, Director and Mrs. Nusbaum of the Laboratory of Anthropology, and, in addition, the management of the La Fonda Hotel, the members of the press, the Ladies' Auxiliary, and the management of the Lensic Theater, for the very cordial hospitalities extended and courtesies shown the members and visitors, which assured success for the meeting.

Those registering were: Alexander, Geo., Asheville, N. C. Alexander, H. A., Santa Fe, N. M. Ambler, C. J., Mountain Air, N. M. Barakat, M. E., Santa Fe, N. M. Barton, W. C., Santa Fe, N. M. Bass, C. R., Cimarron, N. M. Beam, M. P., Albuquerque, N. M. Berchtold, V. E., Santa Fe, N. M. Blakslee, M. O., Las Lunas, N. M. Bowen, Sarah, Dixon, N. M. Brown, Robert O., Santa Fe, N. M. Cantrell, W. B., Gallup, N. M. Cohenour, L. B., Albuquerque, N. M. Cornish, P. G., Sr., Albuquerque, N. M. Cornish, P. G., Jr., Albuquerque, N. M., and Mrs. Cornish.

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Full transactions of the meeting will be published in an early issue.

#### CASE OF ATYPICAL ANEMIA

(Continued from page 263)

ture dropped to normal, but rose in the evening to 102°. The respiration was 60. The patient was mentally clouded. He sank rapidly. October 13 a medical consultant wrote: "Clinically this case is atypical if the condition is due to benzol. He has on appearance suggesting peripheral blood destruction which is borne out by the icteric index, and this is rarely if ever due to benzol. In addition to peripheral blood destruction he now shows evidence count of 2,000 and the changed character of the red cells suggest toxic action of some sort on the bone of practically complete bone marrow aplasia. This last is characteristic of benzol. The undifferentiated character of many of the white cells, the leukocyte marrow. The influence of benzol cannot be ruled out. If it is present an additional unknown factor seems to me to be present."

October 14 the patient died.

#### Discussion by Dr. Watkins

It is not my purpose to present a diagnostic discussion of this case, as I had to read the autopsy findings in order to make intelligible selection of it for discussion. Dr. Brown is to present the diagnostic analysis. As an introduction to that, I wish to review some of the important facts relative to the white blood cells, since this case is essentially a

study in white blood cell pathology.

The clinical blood picture, as we see it by laboratory methods, is made up of mature circulating cells, differentiated and mixed in fairly constant proportions. These cells do not originate in the circulating blood, but in certain solid tissues from which they are being constantly supplied to the blood. While we study the matured cells in the counting chamber and on stained slides, we must keep in mind that the blood picture thus seen by us is the terminal scene of a process of changes tak-ing place elsewhere. Until we are able, from what we see in this final picture, to visualize in the mind's ye the whole process, we cannot properly appreci-

ate the pathological pictures.

As a corollary of this discussion, it may be said that we are entering on an era of microscopic study of the blood. For several years, research and clinical methods have centered around the chemistry of the blood, believing that we had reached the limits of facts in the microscopic study. It is now becoming apparent that we have only touched the fringe of what the microsope can reveal to about the blood, and throughout the world attention is turning to a more intensive study of the blood cells, their detailed structure, their response to various stimuli, and the meaning of the ever charging blood picture in infections and other diseases. Even in the study of cancer, research workers are going back of the histologic pictures of the stained sections to the individual cell and its internal structure, and even to the ultramicroscopic study of granules in the blood plasma, for new facts about cancer.

So, when we center our attention on the blood cells, we are not rehashing some old story long forgot.en, but we are looking forward through a new door into a new and hitherto unexplored field of medicine. However, what I shall recall to you now, is a rehash of things which are known, intentionally ignoring theories or speculations, to the end that we may have a solid foundation for whatever future studies we may undertake with regard to white blood cells.

The tissues in which the blood cells are made are called the hematopoietic organs or tissues, and are of three classes:

(a) The myelogenous system, consisting of the bone marrow; this furnishes the granulocytes, the erythrocytes and the blood platelets.

(b) The lymphatic system, consisting of the spleen, the lymph nodes and the dispersed lymphoid tissue of the body; these furnish the small

and large lymphocytes.

(c) The reticulo-endothelial system, distributed through the body, in spleen, liver, bone marrow and connective tissue; this gives rise to the large mononuclears or monocytes.

In each of these tissues there are embryonic types of cells from which arise, through a series of changes, the mature cells of the blood. Normally only the mature cells appear in the blood. The degeneration of worn out cells takes place in the blood, and these are replaced by mature cells from the hematopoietic centers above mentioned.

Normally we will have in the blood seven types of cell in fairly constant proportion, giving us the NORMAL HEMOGRAM, with proportions approxi-

mately as follows:

Polymorphonuclear Granulocytes Band form nuclear Granulocytes 5 Eosinophiles 3 Basophiles Small lymphocytes 25 Large lymphocytes Monocytes

This is the simplest, elementary blood picture that we have, showing only the white cells. The proportions given here are those which we find in normal people acclimated to the dry sections of the southwest, the proportions of cells differing from those given in textbooks, which refer to sealevel moist climates. In 1910, stimulated by the researches of Dr. Gilbert of Boulder, Colo., we established the normal white blood cell picture for this section of the country.

In order to fix the signicance of this picture in our minds, let us retrace the origins of these cells of the Normal Hemogram.

In the bone marrow we have the myeloblast, from which are derived the four granular cells of the normal blood; these are the eosinophile where the granules take the acid dye, the basophile where the granules take the basic dye, and the two neutrophiles, one with the band-like nucleus and one wi.h the polymorph nucleus.

From the reticulo-endothelial tissues, of the bone marrow and elsewhere, come the monocytes with

small granules.

From the lymphoid tissue, the lymphoblasts give

rise to the small and large lymphocytes.

Of all these cells, only the granular neutrophiles pass through a recognizable series of changes from myeloblast to polymorphonuclear neutrophile. This ceries of changes is best studied in the acute pyo-

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genic infections, to which we will come in a moment.

As the cells of the blood finish their life cycle and undergo degeneration, physiologic regeneration and replacement by new cells take place without changes in proportions, the worn out cells disintegrating and disappearing and fresh cells taking their places.

The response to an ordinary mild stimulus will usually simply increase the number of circulating cells, without material change in their proportions. The reason for this is the fact that the first response to infection results in a migration of already existing leukocy'es from the lymph spaces into the blood stream, and since the leukocytes probably have the same proportions in the lymph as in the blood, we have a simple increase in numbers along the highways of the body, without changes in pro-

Very soon, in the course of an acute infection, this surplus of pre-existing cells will be used up and the call reaches the myelogenous tissues for new cells. This tissue can respond with an increase in mature cells, both the polymorphonuclear which are the older adult cells, and the young adult or band cells. We find the blood picture now showing a relative increase in the neutrophile granular cells, and a relative decrease in the lymphocytes. lymphocytes are probably not actually decreased in members, at this stage, but appear to be less numerous because of the increase of polynuclears.

When the battle begins to go against the organism, we find that the excess of polynuclear cells becomes extreme, and there will begin to appear in the blood the juvenile type of granulocyte. This has the same significance as would the corresponding reaction, if we regard the body as an organism maintaining a standing army and a series of reserves to resist invasion by a foreign foe. We first have the mobilization of the regular army in the mature polynuclear cells; as the need becomes more acute the first reserves in the form of the younger adults or band cells are called upon. When it becomes necessary to call upon the juvenile cells, it is just as significant as it would be if a country became so exhausted it must call on the fifteen year old boys to join the fighting forces.

Sometimes a drop in the total count, following a primary leukocytosis may have ominous significance, which may be overlooked, unless careful attention is paid to the differential count. It may mean an exhaustion of the ability of the bone marrow to supply further mature cells, or even any more cells at all. We see this in streptococcic sepsis, where the total count and the red cells drop, -through exhaustion of the hematopoietic ability

of the bone marrow. One of the most dramatic instances of this is in the condition we studied some weeks ago,-agranulocytosis, better known as malignant neutropenia. Here the ability of the bone marrow to produce granular cells almost ceases, although usually the red cells are produced in normal numbers.

This brief review of what is likely to take place in acute infections gives us a basis of better understanding for what occurs in chronic blood con-

ditions.

We must remember that two things are going

on simultaneously with variations:
(1) The peripheral destruction of the circulating cells. There is a normal physiological degeneration, and normal replacement. There are many conditions which accelerate the destruction of the circulating cells, like the benzol poisoning which comes into question in the case we study today, or infections of various types.

(1) The replacement by new cells from the hematopoie ic tissues, which normally are mature cells, but in response to more profound stimuli, the younger forms may appear. As long as the replacement ability keeps pace with the demands, we have a certain blood picture. When the stimuli are too great or of too long standing, this ability may be exhausted, and we will then have a different blood picture.

Discussion by Dr. Brown

The interest in this case centers about the low per cent of polymorphonuclear neutrophilic leukocytes, in a man in middle life with a serious mouth infection.

The granular leukocytes, it is now generally believed, arise from the bone marrow by a differentiation of the neutrophylic myelocytes. It is also generally believed that the eosinophiles of the blood



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are derived from eosinophilic myelocytes of bone marrow. This view, however, is not so generally accepted as is the conception that the granular leukocytes come from the bone marrow. Endothelial cells of the blood are now held to originate from endiothelial tissue. From these facts one must conclude that the lesion which affects the granular cells probably would have relatively little or no effect upon the endothelial cells or lymphocytes, which do not arise from the bone marrow.

Krumbhaar, in an article published in 1926, reports a series of cases in which profound granular cell disturbances were produced from a variety of severe infections and toxemias. One of his cases was of "agranulocytosis" with Vincent's organisms in the mouth. This patient made a complete recovery.

From a theoretical standpoint, it would seem that a lesion of bone marrow affecting that part which has to do with the manufacturing of the granular leukocytes and their forerunners may be either stimulating or depressing. The irritating leticn would throw into the blood stream a greater than normal amount of the bone marrow cells, produing typical myelogenous leukemia. In the event, however, that the lesion were violently destructive there migt be none or nearly none of the bone marrow cells appearing in the blood. The lymphocytes, manufactured in the lymph nodes and other lymphotic structures, and the endothelial cells would still be present in the blood stream, usually in smaller numbers. Ordinarily, in myelogenous leukemia the proportion of lymphocytes to myelocytes is low. But, in the event, of a violently destructive lesion of bone marrow, the proportion of lymphocytes to myelocytes would be high because of the absence of the myelocytes.

On that course of reasoning it seems rational to me to call this an acute myelogenous aleukemic leu-

kemia.

The preferable name, however, according to Processors Meyer and Rosenburg is "agranulocytopenia" after David; or sepsis agranulocytica after Frior. Schultz in 1922 first described the sympome compleet under the heading "agranulocytica angina." Piney and Wyard referred to it as "agranulocytosis."

My dioagnosis then is "agranulocytopenia."

## l'ifferential Diagnosis by Dr. Richard Cabot (Taken from above Journal

The main interest in this case is its contrast to pecricions anemia. The chief contrasts are as follows: in the first place he has no tongue symptom complex under the heading "agranulocytical eccuse patients usually do not mention it unless you ask them. In the second place there are no finger symptoms. In pernicious anemia you usually get numb fingers. In the third place there is no achylia, which I agree with Dr. Minot is as reliable as any sign of pernicious anemia we have. Fourth, this case goes steadily down from bad to worse. Perricious anemia does not do that. The red count goes down and up once, twice, or three times, and usually that is the last. Pernicious anemia is never progressive. This anemia is progressive and therefore not pernicious. Fifth, there in the blood; the strikingly small number of polynuclear cells and the absence of any enlargement of the red cells, which we almost always get in remicious anemia. As far as I know there are cally three diagnoses to be considered: (1) an oplastic anemia, an anemia in which the bone marrow does nothing; (2) benzol poisoning, which so far as I know cannot be distinguished post mortern except that if you find no cause you call it

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aplastic, and if you find a cause it is poisoning. (3) The third possibility which I do not know how to exclude is bone marrow tumor. They have been over the body pretty carefully, I should say. There was something below the liver. It is described only once and never mentioned again. I do not know whether to take it seriously or not. I do not know any tumor of the liver that will give us a picture like this. If it had been hypernephroma they probably should have got some evidence of metastasis in the bones, whereas so far as I know bone marrow tumors do not show characteristic x-ray changes.

I cannot say any more. I do not know how to exclude benzol in this case. I do not know how to exclude a marrow tumor. I think it is between those two rather than the so-called aplastic anemia. A few years ago I should have said, What is the use of taking up this time in discussion? It does not make any difference anyway. Now we say, If it is pernicious anemia we can cure it. The only thing I em sure about is that it is not pernicious.

Discussion of Postmortem Findings by Dr. Mallory. (Taken fro above Journal)

Anemia, atpyical. Bronchopneumonia.

Hyperplasia of the bone marrow.

We pathologists I think have been a little bit spoiled because we are generally accustomed to have the last word on everything, but this is one case in which we could not get any farther than the clinicians. He certainly did not have an aplastic anemia. We can say that definitely, because he had a very red bone marrow and microscopically it showed a very rapid production of red cells and also

of the white cells. Why these rapidly forming blood elements were not being distributed into his peripheral blood stream I have no idea. The proportions in the femoral bone marrow, which of course in a normal person is composed almost purely of fat, were approximately the proportions of white and red cell formation that we normally find in the vertebral or sternal marrow, where red and white cell formation goes on under normal circumstances. The picture was not that of a myelogenous leukemia, or even of the aleukemic leukemia, a term used where the bone marrow is completely filled with rapidly forming cells of the white cell series. In this case there were more reds being formed than whites, and there was nothing to suggest a neoplasm.

As to his other organs, he had a slightly enlarged heart and some congestion of the liver and kidneys. There was a slight, not a very definite cirrhosis of the liver.

The spleen was fairly large, about 480 grams, and much congested. On microscopic examination a good many normoblasts were seen there and a great many phagocytic endothelial cells which were ingesting red cells. That is something that we very commonly find in hemolytic anemia, but it is not in itself sufficient to make a diagnosis.

The two cases of benzol-poisoning I have seen had absolutely aplastic marrows, whereas here we have an extremely hyperplastic one. I have seen the marrows of rabbits treated with benzol where in certain stages you get a hyperplastic marrow, but nothing comparable to this. I cannot say that it is not benzol, but it is not characteristic of any of the fatal cases that we have seen here.

Dr. Cabot: I still think benzol is the best guess.



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#### **BOOK REVIEWS**

SIMPLE LESSONS IN HUMAN ANATOMY, by Morris Fishbein, M. D., Editor, Journal of the American Medical Association, Chicago, published by the Association.

This is a very excellent book and the reviewer has already leaned the one sent for review, to one or two laymen friends. It is suitable for material for popular talks on anatomical matters, as well as for illustrations. It gives authoritative information in simple language and is fully illustrated. The comparisons throughout are taken from familiar phenomena in the mechanical and physical worlds. It is commended to any doctor who wishes to place in the hands of a patient or student a simple work on anatomy.

W. W. W.

PHYSICIANS' MANUAL OF BIRTH CONTROL, by Antoinette F. Konikow, M. D., author of "Voluntary Motherhood"; Buchholz Publishing Co., 1440 Broadway, New York.

This book is what the name implies. It is founded upon actual clinical investigation. The subject is handled in a matter-of-fact manner that robs it of all but the scientific aspect.

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O. H. B.

BODY MECHANICS, EDUCATION AND POSTURE—the report of the subcommittee on Orthopedics and Body Mechanics of the White House Conference on Child Health and Protection.

This is the report after searching investigation on the relation of body mechanics and posture to the health and well being of children. A mass of clinical evidence is presented to prove that not less than two-thirds of the young children of the United States exhibit faulty body mechanics. "The Chelsea Report," included in the book, proved that improvement in body mechanics resulted in improvement in health and efficiency.

This is a subject of vital importance to the physician and to the child, but there are few subjects of which the physician is so ignorant. To all who would learn, this splendid book is recommended.

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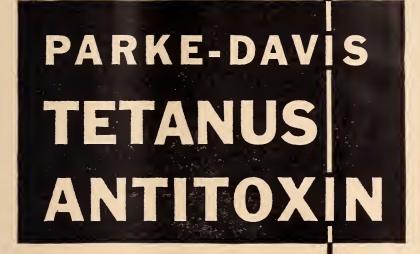
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No. 7

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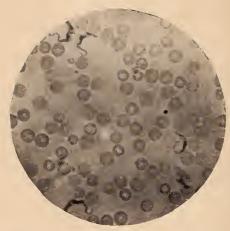
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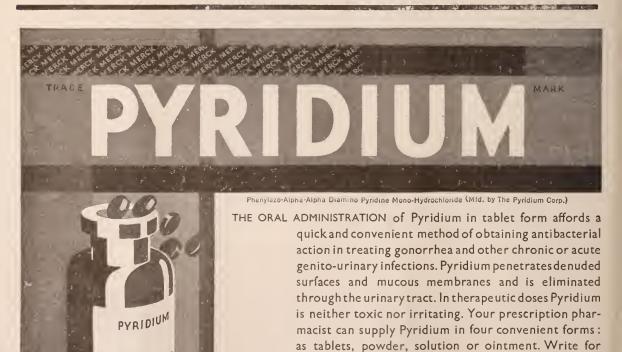
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### URETHRAL METHODS FOR THE RELIEF OF PROSTATIC. **OBSTRUCTION**

### HISTORY AND PRESENT STATUS

By DAVID M. DAVIS, M. D. Phoenix, Ariz.

(Read before the Forty-First Annual Meeting of the Arizona State Medical Association, held at Globe, Ariz., April 21-23, 1932.)

It is difficult to say exactly when the history of intra-urethral methods of relieving prostatic obstruction begins. It was only about 150 years ago that physicians, generally, began to gain any adequate conception of the pathology and natural history of prostatic obstruction. The first operative cure of prostatic obstruction must have been performed by some ancient lithotomist, who seized with his forceps a projecting median lobe, thinking it to be a stone. Fullerton states that Covillard did this in 1639. It was, however, generally considered a very poor thing to do, because of subsequent hemorrhage. In France, however, Amussat, in 1827 had the courage to remove such a lobe purposely with scissors through a perineal opening, and from experience Nicod suggested the possibility of removing such a lobe by means of a large catheter with a large eye, the edge of which was sharpened. I can not make sure whether this was ever actually done or not, but it may serve as the first suggestion of a real intra-urethral method.

Apparently this idea attracted a good many physicians at the time. About 1835 or 1840, Leroy d' Etiolles presented a most ingenious instrument. It consisted of a metal sound constructed in halves. When rotated, the halves of the curved end separated within the bladder carrying with them a wire snare. This made it possible to place the snare about the root of a pedunculated median lobe. This instrument was seldom, if ever, used.

There was much discussion at this time as to whether the bladder became paralyzed in these cases, or whether it could resume its function after the removal of the obstruction. Guthrie in England published an excellent article in 1834, contending correctly that obstruction was the whole story. To meet this situation, he devised an instrument similar to an internal urethrotome, with which he proposed to cut open the vesical orifice. This procedure was, of course, entirely insufficient in most cases, although he had a few good results.

From 1839 to 1852, the great French urologist, Mercier, devised a half-dozen different instruments for the same purpose. Some of these had cutting blades similar to Guthrie's but more effective; while another had a circular cutting blade—the progenitor of the Young punch. These instruments, however, were all small and had only a limited usefulness.

With the development of knowledge concerning electricity, Bottini in 1876 modified one of Mercier's cutting instruments by replacing the cutting blade with a galvano-cautery. This instrument was later improved by Freudenberg and Young and became very popular. With it, large portions of the prostate could be burned away or separated and many cases were cured. The large amount of slough, however, produced many infectious complications and it was easy to burn too far, so that the blade entered the rectum or injured the prevesical plexus of veins, causing fatal hemorrhage. As a result of this, the Bottini operation finally fell into disfavor and prostatectomy became the procedure of choice.

In 1909, Young of Baltimore, who had noticed that in certain cases the amount of tissue which had to be removed to relieve the obstruction was very small, returned to the intra-urethral method and constructed his punch instrument. This instrument was larger than Mercier's and with it generous pieces could be removed, making it possible to cure many cases of median-bar obstruction and obstruction due to small or moderate-sized median lobes. Hemorrhage was the greatest drawback to the method. In 1911, Young modified the instrument by replacing the cutting edge of the blade with a circular electrocautery blade. In 1920, Caulk of St. Louis produced independently a very similar instrument. With this instrument, hemorrhage was completely overcome, but the infectious complications previously noted with the Bottini instrument, reappeared. In 1917, Hinman of San Francisco began the practice of inserting a cystoscope after the punch operation was completed, observing the bleeding points and arresting each one individually by electro-coagulation with a flexible electrode. While he had great success with this method, he never formally published it, and it was rediscovered independently by Bumpus of Rochester, Minn., in 1926. Special instruments to make this procedure easier were invented by Day of Los Angeles and McCarthy of New York. So modernized the punch operation became a highly successful and satisfactory method of dealing with prostatic obstructions in cases where the amount of tissue was small.

My own contribution took the form of a punch instrument made with a long beak, equipped with a flexible wire, allowing the orifice to be drawn up into the notch of the punch, so that larger pieces could be excised. With all instruments of this nature, however, the amount of tissue which could be removed was strictly limited, and they afforded no help in the attack upon the greatly enlarged prostate.

In 1913, Stevens of New York suggested the destruction of large prostatic lobes by the simple application of electro-coagulation. This was a modernized Bottini operation done under vision. With it, however, came again the disadvantages due to the farge masses of necrotic tissue left behind. In 1914, Luys of France published a similar method, in which he used gouged-shaped galvano-cautery blades for removing pieces of the lateral and median lobes, and electro-coagulation for stopping hemorrhage. Heitz-Boyer of Paris also employed a similar method, but in this country it found no favor.

Shortly after the World War, the electrical technicians discovered the undamped electrical current, which, it was found, would cut tissue with a minimum of destruction. Maximilian Stern of New York was quick to seize upon the importance of this discovery for intra-urethral procedures and constructed an instrument which he called the "resectoscope." This instrument had a small movable wire loop with which small cylindrical segments

could be removed from the prostate under vision. It functioned very successfully as far as the cutting was concerned, but it was soon found that the cutting current produced such a shallow coagulation that hemorrhage occurred almost as freely as though one had used a knife, and the instrument, therefore, remained as a mere novelty.

Shortly afterwards, Collings of New York, simplified the procedure by using a simple angulated knife-like electrode for the application of the cutting current. He moved this rapidly back and forth through the prostatic tissue, literally destroying it. He was able to treat many cases successfully, but the difficulties with hemorrhage were still present.

Theodore Davis of Greenville, South Carolina, had obtained a Stern resectoscope. The ease with which the enlarged prostate could be whittled away with this instrument fascinated him and he realized that, if he could apply at will through the wire loop a coagulation current for stopping such hemorrhage as might occur, the method would become ideal. The technical difficulties facing him proved to be very great, but, spurred on by enthusiasm, he labored in the semi-obscurity of his small southern city until all difficulties were finally overcome. He found that he was now freed from the limitations of the punch instrument, and that with this loop he could cut away as much as might be necessary of the lateral or median lobes, stopping the hemorrhage easily as he went along. He gained much experience before the medical world in general became aware of his work, and found that he was able to remove as much as 35 grams of tissue from a single individual. At first the results were received with skepticism, but he soon demonstrated the value of his instrument, and it took the urological world by storm.

Fired by his success, McCarthy of New York modified his pan-endoscope in such a manner that a loop similar to that used by Davis could be used in it, and with this instrument results exactly similar to those of Davis can be obtained. The only difference is that with the Davis instrument one cuts toward the bladder, while with the McCarthy instrument one cuts from within the bladder outward. Vision is unobstructed at all times and one can remove exactly as much or as little as he wishes.

Tremendous enthusiasm has been created by the advent of these two instruments, so much so that papers have already been published with such sensational titles as "Is Prostatectomy Doomed?" Enthusiasm must, however, be curbed until more experience has been gained. Prostatic resection has al-

ready led a number of urologists into tragic mistakes. Carried away by enthusiasm, they have operated, without proper preparation, upon patients with severe and long-standing obstructions, causing death from uremia and sepsis, and, unfamiliar with the instruments, they have cut away portions of the external sphincter, leading to incontinence; burned the bladder, causing extravasation of urine; and damaged the ureters, giving rise to ascending pyelonephritis. On the other hand, others who have practised until they are perfectly familiar with the instruments and who have prepared their patients just as carefully as they would for regular prostatotomy, have duplicated the success of Davis. Even from a conservative point of view, it would appear that all cases of prostatic obstruction in which the prostate is small or of moderate size, can be successfully treated by this method, regardless of whether the obstruction is due to median bar, contracture of the orifice, benign hypertrophy, or carcinoma. Apparently some of the largest prostates would require such lengthy operations with the resecting instruments that prostatectomy is preferable. The exact size which makes resection unprofitable remains to be determined, but it is probably quite large.

My own experiences with prostatic resection have been uniformly successful. None of the patients has had to remain in the hospital more than four days after the operation, most of them leaving in two days. I have not yet operated upon any very large prostates, but these specimens will demonstrate that it is possible to remove a very considerable quantity of tissue by this method.

### DISCUSSION

DR. H. M. PURCELL (Phoenix): I have had no personal experience with the resectoscope on patients, as I received the last of my outfit—the coagulating part of the machine—only two days ago. But I believe it will practically do away with prostatectomy.

I prefer the McCarthy instrument (resectoscope) because it gives better vision than the Sterns type.

It is not necessary to remove all the enlargement. Removal of a very small portion will often relieve the obstruction, even in cases with a large amount of residual urine. The enlargement is as much due to congestion due to the obstruction as to true hy pertrophied tissue. Removing the obstructing portion allows the prostate to become smaller. I remember one case I had, with complete obstruction and several pints residual urine, that showed a large prostate on examination per rectum. I did a suprapubic drainage and, when the patient was in condition, in about two weeks, I did the second stage without again examining the prostate per rectum. I found that the prostate had become practically

normal in size and I was able to remove only a piece the size of the end of the little finger from the median tobe region.

I believe the method is going to replace prostatectomy in practically all cases. I believe in the future we will not see the advanced cases, because we will operate earlier and the patients will be willing to come to us earlier.

There is a greater percentage of cures by this method than by prostatectomy. T. M. Davis of Greenville, S. C., who is the only man with five years' experience with resection, puts it at 23 to 1 in favor of resection.

As to the amount of tissue that has been removed, Davis of South Carolina reports as high as 40 grams in a single case. It has been said that a necessity is a "strong back and a strong determination," some of the first cases reported taking as long as two hours. But with the present improved instruments larger sections can be taken and the time required is shortened.

We must prepare the patient the same way that we would a case for prostatectomy. A patient with a large residual and who has never been catheterized, would be a poor risk and must be decompressed as for a prostatectomy.

As to the dangers, they can be avoided if we are careful. The postoperative pyelonephritis is due to burning the region of the ureters and can be avoided. And there is no reason why we should cut the external sphincter, as the vera montanum should be our guide as to how far to cut.

As to the electric machine, there are two types on the market—that using a vacuum tube, as the Mc-Carthy unit of the Comprex Oscillator Co., and the spark gap, as the Liebel-Flarsheim machine. The McCarthy machine gives the true so-called "undamped ' wave, which cuts most easily, but does not give enough hemostasis. It takes a different type of current to stop hemorrhage—the kind found in diathermy machines and known as a "damped" wave. The Liebel-Flarsheim machine has both a cutting, slightly damped, wave, and a hemostatic type of current. In the McCarthy machine a double foot switch merely reduces the current strength so it will not cut, when we want to stop bleeding. In the literature, such men as Day of Los Angeles, Livermore of Memphis, and McCarthy, all speak of the McCarthy machine as a "perfect" machine, but they are apparently afraid of hemorrhage; but the men with the Liebel-Flarsheim type of machine do not mind the hemorrhage, as they have complete control of it.

This method is also applicable to malignancies, and Caulk reports relief of obstruction and much better life expectancy in cases treated by resection than by prostatectomy.

DR. W. G. SCHULTZ (Tucson): Two years ago I read a similar paper before our state meeting at Prescott, in which I brought the discussion of instruments for handling bladder-neck obstructions down through the Collings electrotome.

We now have the resectotome which combines all

of the principles for which former instruments were being designed, viz: First, good vision at all times; second, control of primary hemorrhage; and, third, small amount of coagulated tissue, minimum slough, producing less infection, fewer pyelitis complications and fewer cases of secondary hemorrhage.

The instrument permits an excellent means of handling median bars and, in addition, also gives us an effective way of removing lateral lobes.

Of course, we hope to do away entirely with prostatectomies by the use of this instrument, but their number will be greatly reduced and a very great number of the cases formerly operated by means of prostatectomy will now be handled with the resectotome, saving much time in hospitalization, and so forth.

DR. O. E. UTZINGER (Superior): For a great many years, efforts have been made to get away from prostatectomy for the relief of urinary obstruction. Dr. Hugh H. Young's punch operation was probably the first important step in this direction, but, for a long time following its introduction, not much progress was made. Several urologists, however, have been at work perfecting and using the resectoscope, as has been so clearly shown by this paper presented by Dr. Davis. Here at last we have a method that will, in a large percentage of cases of prostatic obstruction, give complete reiief, and by a much less drastic operation than prostatectomy.

Dr. Davis has sounded a timely warning against over enthusiasm by the urologist, and a caution for the same care in the study and preparation of the patient that is practised preceding prostatectomy.

DR. D. F. HARBRIDGE (Phoenix): I should like to ask Dr. Davis whether he uses a local or a general anesthetic.

DR. DAVIS (closing): Transacral nerve block is entirely satisfactory for these cases. With proper preliminary medication, it is successful in practically 100 per cent of the occasions. A low spinal anesthesia can be used, but it is unnecessary, and I, personally, have a prejudice against spinal anesthesia. Explosive anesthetics must, of course, be avoided.

### HEART MURMURS

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(Read before the Forty-First Annual Meeting of the Arizona State Medical Association, held at Globe, Ariz., April 21-23, 1932.)

So much confusion has been present for centuries regarding the functions of the heart and blood vessels that I venture on the subject of heart murmurs with some timidity. Heart murmurs, we now know, are dependent upon the circulation. It may seem incredible to us, but it was not until William Har-

vey, in 1628, published his famous experiments, that the circulation of the blood was recognized. Anatomists, scientists, and physicians had for centuries sought in vain the solution of three puzzling problems: the function of the blood, the purpose and mechanism of respiration, and the source of bodily heat. The origin of the term "artery"—"air carrying"—gives us a good idea of early concepts.

Aristotle, contrary to the common opinion, recognized perfectly the existence of venous and arterial blood, as well as the pulsations of the heart and blood vessels. These pulsations were believed to be synchronous, and, because his dissections and those of other anatomists did not reveal any connecting channel between the right and the left side of the heart, nor between the arteries and veins, he assumed them to be separate systems. Aristotle believed that the blood must move with a slow, tide-like motion for the exchange of substances between the blood and tissues. It was the function of the venous blood to collect the nutriment from the intestines and carry it to the liver, where vital and natural spirits were elaborated, and then it was carried on to bathe the tissues in the venous system. The arterial blood also moved in a slow, tidal fashion. Its function was to convey to the tissues pneuma, which was a vital spirit (air) obtained from the lungs, and to carry to the body heat, which it was thought was produced and stored by the heart itself.

To this concept of the circulation, Galen, six hundred years later, added the suggestion that the liver perhaps was the center of the vascular system, and not the heart. It is said that, by observing an animal bleed to death following arterial section, which emptied veins as well as arteries, he became convinced that there must be some connection between the arterial and venous systems. Anatomical dissections did not confirm his belief, so, to satisfy his reasoning he proposed the existence of pores through the ventricular septum and a probable connection as well between the peripheral arterial and venous systems. For fourteen hundred years after Galen, very little construction work was done, and it was this concept of the vascular system that Harvey was taught as a student.

There were still bitter arguments as to the relative merits of the Aristotelian and Galenic theories when Harvey began his experiments. Harvey's experiments were so simple and so spectacular that I cannot resist mentioning some of them. It is said that, during his dissections, he observed that the valves in the veins were so arranged that blood could flow freely toward

the heart, but with great difficulty in the opposite direction. He at once performed the simple experiment of tying a tourniquet tightly about the arm. He observed that the arterial pulsations ceased and that the tissue above the tourniquet became congested. He loosened the tourniquet slightly so that the arterial pulsations could be felt at the wrist, and, much to his joy, the veins below the tourniquet immediately became distended with blood, and "knots," the valves, stood out along the course of the obstructed veins, thus suggesting strongly that the blood traveled from the heart through the arteries and toward the heart in the veins.

While watching a dog's heart at operation, he observed, much to his amazement, that it was not during diastole, but during systole, that the apex of the heart struck the chest wall, and that during this period the heart became much smaller. Here, then, was the proof that the heart and blood vessels did not pulsate synchronously, but when the heart became smaller, the arteries dilated. He soon calculated the amount of blood forced out of the left ventricle at each contraction. Estimated on the basis of half an hour, more blood was pumped from the left ventricle than the entire body contained, thus proving conclusively that the blood must circulate. Harvey inherited a heart that did not beat, a vascular system that was disorganized, pores in the intraventricular system which did not exist, as well as a host of other disordered observations. In a few simple experiments he brought the entire mechanism into harmony, and his work is the basis for all our modern physiology of circulation.

It is interesting to note that murmurs were often heard by the ancient physicians. Hypocrates makes notes of such findings without offering adequate explanations. Empedocles, when seeing a patient who, from the description, must have had an aortic stenosis, judging by the intensity of the murmur is said to have remarked, "Surely this unhappy mortal is possessed by the very prince of evil spirits!"

The physiology and physics of the circulation offer us a satisfactory explanation for many circulatory phenomena. I wish to mention briefly a few of the factors concerned in the mechanism of the production of heart murmurs. Because systolic murmurs are the most frequent, and perhaps least understood, this discussion will be limited to their consideration.

Schlieps, in Germany, and Thayer in this country, in examining a total of two thousand patients, have recorded a frequency of systolic murmurs that averages as follows: 60 per cent in children from six to

fourteen years; 35 per cent from ten to twenty; 22 per cent from twenty to thirty, and 19 per cent from thirty to forty. The incidence, you will note, is very high. It is probable that a great proportion of cardiac consultations are because of systolic murmur, and many people with normal hearts are condemned to invalidism because of a systolic murmur.

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A murmur is a sound produced, when fluid passes through a tube, by vibrations set up in the walls of the tube. The intensity of the sound produced is directly proportional to the square of the amplitude of the vibrations. It follows that thick or rigid walls reduce the intensity of sound because of the reduced amplitude of vibration. Vibration in the walls of the vascular channels is developed only when the motion of fluid particles becomes turbulent. So long as the fluid particles run perfectly parallel, no turbulence occurs and no sound is produced. When the particles of fluid no longer flow in parallel lines, turbulence occurs; with turbulence, the walls of the vascular channels vibrate and, if the vibration is sufficient, sound is produced. Turbulence may be produced in several ways. The passage of fluid from a narrow tube to a larger one, or vice versa, may produce turbulence. The flow of fluid over a partial obstruction in the channels may produce turbulence. If the speed of the flow is greater than the critical velocity, turbulence will occur. The critical velocity may be defined as that speed at which any fluid will no longer run quietly in parallel lines but becomes turbulent. This factor is an important one in the production of systolic murmur. It has been calculated from Reynold's formula that the velocity of the blood as it enters the aorta and pulmonary artery is very near the critical velocity for blood. Fahr, at the University of Minnesota, in his excellent work on Heart Physiology, has confirmed this by an experiment with a Starling heart-lung preparation, where turbulence can be seen in the glass tube. We have, then, a normal velocity of blood at the aortic and pulmonic areas which is near the critical velocity, i. e., a slight increase in the speed of flow at these areas will then produce turbulence and murmur. The murmur will be systolic in time because the blood reaches its highest velocity during systole. Many other factors influence critical velocity. Changes in viscosity or anemia may reduce the critical velocity to the point where murmurs occur without actual increase in velocity. Exercise, and fever, and many other conditions, may increase the velocity sufficiently to produce turbulence and murmur. Any irregularity in the channel may produce turbulence and murmur. Thayer and MacCallum' have shown that murmurs are produced in dogs if the stethoscope is held over the pulmonary artery and aorta with the slightest pressure. The normal mitral valve may not close sufficiently tight in systole to prevent some slight flow between the cusps. A very small irregularity on the valve may produce a very loud murmur. These are a few of the simple mechanisms by which systloic murmurs may be produced in the absence of organic heart disease, and usually in perfectly normal individuals. The frequency of systolic murmurs in hyperthyroidism is an excellent illustration of a murmur produced by increased velocity of blood. The anxiety of the patient during physical examination may often produce murmur. The three most common areas in which one hears a systolic murmur are the pulmonary, aortic, and mitral areas.

Systolic murmurs heard best in the left second and third interspaces (pulmonic area) are the most frequent in occurrence of all systolic murmurs. The blood exceeding the critical velocity is a frequent explanation of systolic murmurs in this area. The shape of the chest is important, as I have repeatedly found on fluoroscopy in adults who have had such systolic murmurs. The chest if often flat, and the pulmonary cone in nearly every instance was noted to be almost against the sternum, which produced a slight distortion of the cone on systole, thus producing murmur. Querner<sup>2</sup> has shown that practically no lung tissue exists, in these flat-chested individuals, between the sternum and the conum pulmonus. The thinness of the blood vessel walls is one explanation for the great frequency of systolic murmurs in children and in young adults, for the elasticity and width of vibration decrease with age. One only needs to rule out a pulmonary stenosis or a congenital malformation of the heart, to be sure that this murmur is functional and due to one of the above-mentioned factors.

Systolic murmurs heard over the right second interspace (aortic area) may, in general, be analyzed in the same way. The speed of the blood is here, again, near the critical velocity, so that excitement, fever, and many other things may produce murmur. Senile ectasia of the aorta provides a sudden change in diameter of the tube which may produce turbulence and murmur. One needs here only to rule out aortic stenosis. Aortic insufficiency often accompanies stenosis; therefore, one must carefully examine for a diastolic murmur down the left side of the sternum. If in addition there is no pulsus tardus, no

thrill, and a normal pulse pressure, aortic stenosis is not present.

The third common area in which systolic murmurs are heard frequently, is at the apex, or just inside the nipple line. Systolic murmurs heard here are often transmitted from the pulmonary area. They may be cardio-respiratory or postural, or the cusps of the mitral valve may show some slight irregularity and produce murmur under the pressure of systole. Mitral insufficiency is undoubtedly diagnosed much too frequently in accounting for an apical systolic murmur. Mitral insufficiency alone is not of any serious import. As Steele so aptly put it, "No one ever dies from mitral insufficiency." With a murmur in this area, the question of mitral stenosis must be raised. If there is no diastolic murmur, if the esophagogram is normal, if the vital capacity is normal, and if the orthodiagram does not show abnormalities in size or shape, one can be sure that no mitral stenosis exists. In patients who have recently had an acute febrile illness, such as rheumatic fever or acute tonsillitis, a systolic murmur at the apex is presumptively on an organic basis and should be viewed with suspicion for at least two years, during which time frequent examinations should be made for a developing mitral stenosis. Judgment often cannot be passed until a year or two has elapsed, and if, at the end of this time, no additional manifestations have become evident, the murmur can safely be classed as functional.

All patients suspected of heart lesions should be carefully evaluated for changes in the size of the heart—best done with an orthodiascope or a six-foot x-ray of the heart—changes in vital capacity, with careful examination for diastolic murmurs, electrocardiogram, and an esophagogram made to observe the posterior contour of the heart. Riegler<sup>8</sup> has pointed out the very high incidence in which mitral stenosis can be definitely diagnosed by the esophagogram. All possible criteria should be evaluated, but, in the absence of definite positive findings, we should recognize that systolic murmurs are in general functional in character and easily produced in normal individuals by the various mechanisms described.

### REFERENCES

- 1. Thayer and MacCullum: American Journal of Med. Sciences, 1907, 133, 249.
  - 2. Querner: Muench Med. Woch, 1917, 44, 721.
- 3. Riegler: American Journ. Roentgenology and Radium Therapy, 1929, 21, 563.

#### DISCUSSION

DR. HOWELL RANDOLPH (Phoenix): Evaluation of systolic murmurs is not always easy. With the explanation gievn in Dr. Holbrook's scholarly

paper in mind, it should be made more simple. The rate of blood flow through the tube being an important factor in the production of murmurs, it is readily understood why a normal individual who does not show any systolic murmur at rest, will sometimes develop a systolic murmur after exercise. I have in mind a case in whom exertion brought out both presystolic and systolic murmurs of diagnostic significance. A young man desiring to extend his service connection disability came in to establish the status of his cardiac condition. Following an attack of influenza during the war, he was disabled for three weeks, after which he was put on light duty for the duration of the war. At time of discharge no disability was noted. He gives a history of having had some signs of decompensation at intervals in the interim, which must be discounted on account of that purpose for which the history was given. Examination revealed slight cardiac enlargement to percussion, definite enlargement under the fluoroscope, and left ventricular preponderance in the electrocardiogram. No murmurs were audible until after exercise, when presystolic and systolic mitral murmurs were heard.

DR. H. E. REESE (Yuma): I examine hundreds of school children every year and am surprised at the number of heart murmurs I have to record. Where the murmur is increased by exercise, I usually caution the teacher not to put the child into strenuous exercise. I should like to ask Dr. Holbrook's opinion as to whether I am wrong in limiting the amount of exercise.

DR. L. B. BALDWIN (Phoenix): I am interested in the diastolic murmurs heard over the aortic area in severe primary and secondary anemias, in which no organic basis can be found for the murmurs. So far as I know, no explanation has been given for them, although they have been reported in the literature. I should like very much to hear your impressions of these murmurs and an explanation of their cause.

DR. HOLBROOK (closing): In reply to Dr. Randolph's question, I should say that it is not the systolic murmur, but the pre-systolic one brought out on exercise, that is important. This murmur is often brought out by exercise and I find the use of amyl nitrite very helpful, where patients cannot exercise, in bringing out diastolic murmurs.

In regard to Dr. Reese's question, 60 per cent of children have systolic murmurs from six to fourteen years of age; 35 per cent from ten to twenty; 22 per cent from twenty to thirty, and 19 per cent from thirty to forty. The murmur is due to the speed of blood flow in children, the thinness of their chests, which brings the blood vessels nearer the sternum. Is Dr. Reese doing wrong in curtailing the activities of children who have systolic murmurs? I feel that, if the child is physically normal, has no heart enlargement, and no embarrassment with exercise, a systolic murmur alone should not prevent the child from exercising.

Regarding Dr. Baldwin's question as to the rela-

tion between structure and function, I believe that aortic insufficiency may be due in some cases to a slight dilatation of the ring, as may occur in early lues, and, though one distinctly hears a diastolic murmur, no definite pathological signs may be demonstrable on postmortem. I have had several such experiences but believe that the clear-cut diastolic murmur down the left side of the sternum indicates aortic insufficiency, though it may be unimportant physiologically and difficult to explain pathologically.

### DELAYED TRAUMATIC SUBDU-RAL BLEEDING

WITH CASE REPORTS

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Delayed subdural bleeding, until recent years, has seldom been recognized and oftentimes confused with a rare form of pachymeningitis hemorrhagica interna.. Virchow<sup>1</sup>, in 1857, gave the first classical description of chronic subdural hemorrhage. Trotter2, Putnam8, Cushing, Griswold, Jelsma4 and others have, in the last decade, contributed much information to this subject. In 1925 Putnam and Cushing reported twelve cases. Jelsma in 1930 reported forty-two cases from the literature and two personal observations. During the last few years, numerous case reports and contributions on the subject have appeared in the literature. This information and clinical investigation has given a special interest to the subject and today chronic subdural hematoma is definitely recognized as a pathological

Ingravescent subdural bleeding is invariably due to craniocerebral trauma. A history of injury or violence to the head may be wanting, or so trivial as to escape the memory of the patient. The injury may be so slight that there is no visible bruising or abrasion of the scalp<sup>5</sup>. A history of a smart blow on the head or occiput, or a glancing blow over the vertex, is frequently given. In many cases the injury does not produce loss of consciousness. At most, these patients suffer only a brief period of concussion. They promptly recover from the immediate effects of the blow and resume their activities without apparent disability. More often than not, the incident is entirely forgotten. Delayed subdural bleeding is occasionally encountered in the alcoholic, senile dement, and those suffering from dementia paralytica. Mild head trauma with subsequent development of a spreading subdural hemorrhage, is sometimes found

at postmortem in these individuals, not known to have received a head injury.

In order to understand thoroughly the mechanism of this particular type of delayed subdural hemorrhage, we should first review the gross anatomy of the intracranial contents. Anatomically the brain may be considered as floating on a bed of cerebrospinal fluid and restricted in its motion by the limitations of the dura and its partitions within the cranial cavity. The brain, therefore, is allowed a certain amount of "play." There are small anastamotic vessels connecting the cortical veins near the vertex with the superior longitudinal sinus. These run at right angles and move with the lateral "to-anfro" and backward-and-forward movements of the brain on its bed. Any sudden violence or jarring of the cerebrum beyond its normal confines places an unusual strain on these short veins and may produce a unilateral or bilateral tear in this system. The fixed position of the superior longitudinal sinus and the mobility of the cerebral hemispheres often lead to the laceration of these small veins. Undoubtedly there are other sources of bleeding in such cases of chronic subdural hemorrhage, but this is the usual source. (Fig. 1.)

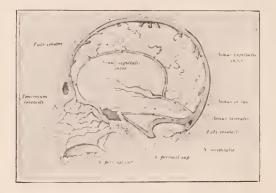


Fig. 1. Sup. long. sinus with short communicating cerebral from cortex. These veins frequently lacerated in chronic subdural hematoma. (Anatomy of the brain and spinal cord) Whitaker.

Chronic subdural bleeding is always venous in origin and may occur over one or more hemispheres. Following the laceration of one of the small vessels, there may be no immediate complaints. As the bleeding goes on and a clot slowly accumulates, symptoms appear. These may come and go, especially if the patient lies down. The bleeding is intermittent and considerable time may elapse between the time of injury and the frank onset of symptoms. In the average case, about two weeks elapse before sufficient pressure occurs to give symptoms.

Headache is usually the first symptom. This is se-

vere and persistent. It may continue a week or more at a time and then rapidly subside should the patient be put to bed or given drugs. However, in spite of rest and treatment, some dull headache usually persists. The tendency is for the headache gradually to increase in severity and assume all of the characteristics of headache in intracranial tumor. That is, it is more severe at night or in the early morning hours. It is generalized, persistent, dull, and boring and often accompanied by bouts of vomiting, the latter not infrequently precipitated by sudden changes in position. Vertigo may also accompany the headache and vomiting, likewise brought on by sudden postural changes. With these symptoms there are frequently mental changes. The patient becomes dull, his attention is blunted and memory defects are observed. The memory defect is usually for recent events. These patients are occasionally committed to a hospital caring for mental patients on the assumption that they are suffering from a psychosis. It is not unusual for these individuals to become indecent in speech and conduct. Insomnia, irritability, and neglect of the sphincters, often occurs. Many of these cases present symptoms of a frontal lobe disorder and this often accounts for the erroneous diagnosis of brain tumor or dementia. The entire symptomatology runs a peculiar course characterized by periods of remission and exacerbation. This may continue for weeks and months (possibly, as given by some authorities, for a year)7. During conscious moments the mind may appear quite normal and responses are usually accurate. Towards the end, a state of stupor develops, followed by deep coma. Even in this state the patient may pass alternately from a state of coma to consciousness. This peculiar alternating of coma with consciousness is almost characteristic of chronic subdural hematoma. It is probably due to varying degrees of cerebral arachnoidal edema and changes in the ventricular system capacity. As the clot increascs in size, there is a gradual displacement of cerebrospinal fluid from the ventricles and arachnoidal spaces and the margin of safety becomes small in the terminal state.

Generalized convulsive seizures may occur, especially toward the latter part of the illness. Focal convulsions rarely, if ever, occur, although slight fibrillary muscle twitchings are often observed. Occurring with this symptomatology is a neurological picture suggestive of a gross expanding cerebral lesion, at times strikingly similar to a deep-seated cerebral neoplasm involving the capsule or basal ganglia. The hematoma may lie over the cerebral cortex from the upper to the lower central convulutions, produc-

ing a progressive paresis of the face, arm, and lastly the leg. (Fig. No. 2.)



Fig. 2. Sketch of cross section of head showing hematoma on upper part of cerebral hemisphere along the side of the superior longitudinal sinus.

Rarely are the separate motor zones singled out, nor is there a true paralysis of the side involved. Usually an extensor toe sign, or some associated pathological pyramidal tract sign, will be discovered and occasionally a bilateral Babinski sign is found when contrecoup cortical pressure or stem dislocation (pyramids) has taken place. It has been observed that aphasia rarely occurs in chronic subdural hematoma. This is probably due to the extracortical location of the lesion. In two cases of left sided hematoma (right handed patients) where the cortex over the lower central convolutions had been extensively compressed, aphasia could not be detected. (See Cases No. 1 and 7.) The contralateral abdominal reflexes are frequently abolished. With these findings there is usually a slow pulse, an elevated blood pressure, and often increased cerebrospinal fluid pressure. The latter, however, is normal in many instances and alone should not offset the more positive neurological findings. The color of the cerebrospinal fluid is often altered to a faint xanthochromic tint. Again, a clear fluid is frequently found. Occasionally we see a case with signs of meningeal irritation (rigid neck and positive Kernig, leukocytosis and fever). (See case No. 8.) The presence of free blood in the subdural and subarachnoid spaces gives rise to these symptoms.

The condition of the eyegrounds, as a rule, does not give us important diagnostic information. In some well-advanced cases the eyegrounds may be entirely normal or present only a faint retinal edema.

Later a mild venous congestion, decrease in the depth of the physiological cupping, and obscuration of the discs appear. One case is reported where the eyegrounds presented frank hemorrhages, exudate, and pronounced choking of the discs (See Case No. 1). Normal eyegrounds with an advanced state of increased intracranial pressure, have been observed in this condition and may confuse the diagnosis (Cases 2 and 3). A normal fundus is not incompatible with a diagnosis of chronic subdural hematoma. In several cases recently observed, with well-marked signs of increased intracranial pressure, the fundus has been normal. Occasionally, a field defect develops and this is of considerable importance in localization (See Case 5).

The presence of a hematoma is indicated by a telltale pigmentation or peculiar yellowish-brown mottling of the dura. In some cases the dura has a dark bluish tint due to the underlying clot. When the dura is reflected, the clot is usually seen to be well demarcated from the cortex. There is a bluish or greenish sheen to the hematoma. Its dural surface is tough, the mass fluctuates and the borders may be smooth and rounded. The hematoma lies entirely in the subdural space and has an organized, well-developed capsule. It has no direct connection with the dura or the arachnoid. Occasonailly the dura may be slightly adherent to the hematoma. Depending upon its age, the clot may be rather firm and of a currantjelly color and consistency or else soft and fluctuating, due to liquefaction. When incised, if it is a longstanding hematoma, the capsule will show numerous well-developed capillaries. The fluid may be of different color, depending upon its age. Older clots are likely to be bile colored, brown, or yellowish. The more recent the hematoma, the greater the tendency to retain the color of coagulated blood. The capsule easily stripped from the underlying arachnoid and the cortex of the brain usually will be flattened and yellowish, due to the long-standing compression. The cortical vessels appear tortuous and compressed.

The capsule of the hematoma is composed of fibrous tissue intermingling with scattered mesothelial cells which have migrated in from the meninges. On the arachnoidal side of the membrane is a well-organized layer composed of mesothelial cells. These, in form and general appearance, are related to the reticulo-endothelial system and closely resemble, histologically, Kupffer's cells of the liver. The bile pigments are found in the contents of the hematoma and there is some speculation that the cells of the meninges are, under certain conditions (pathological) responsible for the formation of bile pigment.

The cortex around the hematoma frequently shows a considerable degree of arachnoidal edema and on pricking the arachnoid there may be a copious escape of cerebrospinal fluid. So-called pachymeningitis hemorrhagica interna is probably the same as subdural hematoma, the only difference being one of degree, in the organization of the clot. The peculiar thickened appearance of the dura occasionally seen in the spinal and cranial dura is not the same lesion, pathologically, as the encapsulated subdural hematoma.

The differential diagnosis must take into consideration an intracranial tumor, abscess, or possibly a state of uremia. The presence of a subdural hematoma is frequently overlooked and a diagnosis of the above-mentoined conditions will be given first consideration. One must consider, in the differential diagnosis, chronic subdural hematoma in an insane individual unless the psychosis follows the clear-cut clinical symptoms of a particular type of dementia, and even in these cases, where trauma has occurred, it is unsafe to ignore the possibility of hematoma.

Direct puncture of the ventricle may be necessary in order to clearly localize the lesion. This is especially ture where bilateral neurological signs are present. (See Case 3.)

The treatment is always surgical, although opinions differ as to the best method of exposure, some favoring the osteoplastic flap operation, while others prefer the simple subtemporal decompression operation. It has been the author's observation that the condition of the patient will largely govern the method for the exposure of the lesion. If the diagnosis can be made with a reasonable certainty and the general state of the patient is satisfactory, then the osteoplastic flap operation may be used with safety. Many of these cases are admitted in a state of deep coma and in poor general condition. The turning down of a large flap only adds to the delay and invites more risk, due to the time required to make and close the flap. Not infrequently, time is an important element in the management of such conditions and it is felt that for the average case the simple subtemporal muscle-splitting incision, with an adequate decompression, is sufficient. Some operators prefer the use of multiple trephine openings with irrigation for the removal of the hematoma. There are a few cases in which the hematoma forms on top of the hemisphere adjacent to the longitudinal sinus and involves only a limited area. This occurred in one case and the hematoma was almost overlooked. (See Case 4.) It is seldom, if ever, that the hematoma re-forms and one need have no fear in effecting a tight closure." (Fig. No. 3.)



Fig. 3. Photograph of craniogram showing both ventricles dislocated to the left. Direct puncture of ventricle with insufflation of air. Case 3.

Local anesthesia is to be preferred. The use of a general anesthetic adds an unnecessary risk. Dehydration may be required following the removal of the hematoma. The release of the brain from long-standing pressure may result in an exaggeration of an already existing edema.

The following cases have been considered of sufficient interest to warrant their presentation in an abbreviated form. Each one is a separate clinical lesson:

CASE NO. 1. T. M. Seen in consultation with Dr. A. J. Ghiglione at Providence Hospital, Seattle, Washington, on January 8, 1930. Patient gives a history of vigorous health all his life until one month ago when he began to complain of headache, necturnal in character, with dizziness, nausea, and occasional bouts of vomiting. There was no history of an injury although there was a history of a recently infected foot. He consulted a nose and throat specialist who advised removal of his tonsils as a possible cause of headache. No relief followed this procedure and, in view of the increasing severity of the headaches, he was admitted to the hospital.

Patient was in a drowsy condition although he could give a reliable history. He complained bitterly of his head, keeping his hands against his forehead most of the time. The eyegrounds showed an advanced degree of choking of the discs about 4 diopters. There was a slight weakness of the right hand and a lateral coarse nystagmus to the left. His speech mechanism was intact, although complete tests for aphasia could not be carried out, due to his mental condition.

A diagnosis of brain abscess was favored, although chronic subdural hematoma could not be eliminated. On these meager neurological findings, a localization was made upon the left side and a subtemporal decompression carried out.

The dura had the characteristic pigmented appearance. It was tense and bulging. On reflecting this, a greenish-blue mass was seen. Incision of the capsule of the hematoma permitted extrusion of a

large quantity of liquefied blood clot under pressure. This was removed by irrigation with normal saline and the wound was closed without drainage. Subsequently, he gave a history that about one month prior to the onset of headaches, he had received a glancing blow on the left side of the head during a boxing match. There was nothing unusual in his convalescence and he made a prompt recovery.

CASE NO. 2. P. R. This man was seen at the City Emergency Hospital on January 4, 1931, suffering from multiple contusions of the head and face, with discoloration about the eyes and a linear fracture in the right temporoparietal region. After a short period of shock, he improved and his condition was quite satisfactory. A lumbar puncture was performed the second day after his admission to the hospital and the fluid was blood stained. The pressure was 12 (mercurial). The eyegrounds remained clear.

He was transferred to the Swedish Hospital the second day following his injury, where observation was continued with Dr. Paal Torland. On the third day following the accident, it was noticed that there was a slight sagging of the left side of the face, of the central type. The eyegrounds remained normal and all of the deep reflexes were normal. No pathological reflexes were elicited. The strength of the extremities was normal and equal and patient's mental condition seemed a little brighter. His speech seemed free of defect.

A second lumbar puncture was performed and the pressure was 10 mm. (Hg.). The fluid was slightly amber colored.

On the fourth day there was a rapid decline in pulse rate to 40 to the minute. Prior to this it had ranged from 80 to 70. It remained slow and, in spite of the absence of definite neurological findings or any changes in the eyegrounds, a diagnosis of chronic subdural hematoma on the right side was made and operation advised.

Under novocaine block, a right-sided subtemporal decompression was accomplished. The dura was found to be bulging. A moderate accumulation of clotted blood was evacuated from beneath the dura. The brain pulsated but seemed to be tense and dry. His condition was not satisfactory and the operation was hastily terminated. He improved somewhat during the day but the next morning his condition was not considered satisfactory and the left side of the skull was opened through a subtemporal decompression.. The dura was found to be bluish, tense and bulging. A large hematoma, partly coagulated, was evacuated under increased pressure. The brain pulsated normally but did not fill up the "dead space." The wound was closed without drainage. His condition improved and it was thought that he was in satisfactory condition until the following morning, when respirations ceased, and, although artificial respiration was instituted, he did not revive.

CASE NO. 3: F. M. Referred by Dr. P. G. Mikkelson, of Renton, Wash. Age 55 years. Occupation, laborer. Admitted to Martha Washington Hospital August 4, 1931, from his home in Renton, Wash. His chief complaints were severe frontal headache and dizziness.

A story was obtained from the family that on May 15, 1931, he fell, striking the back of his neck on the hard earth. He was not unconscious and resumed his work. Some time later, a matter of several days, he began to complain of persistent headaches. There was some nausea and vomiting. It was noticed that the headache would come and go. On reclining he was free of symptoms but on resumption of his work, the headaches would return. The family also noticed during the last two or three months a distinct change in his mental state. He became forgetful, irritable and dull, and more or less childish. On several occasions he exposed himself and voided publicly. Further information was obtained that the man was formerly a bright, happy. well-mannered individual.

The neurological examination showed the following points of interest: A strong bilateral positive Babinski sign and decrease of patellar and abdominal reflexes. The fundal veins showed a slight engorgement.

A lumbar puncture was performed with patient lying down. The pressure was 22 mm. and the fluid clear.

In order to localize the lesion, a direct puncture of the ventricle was performed on August 6, 1931, 30 cc. of fluid being withdrawn from the ventricle through a trephine opening over the left occipital region, and 20 cc. of air insufflated into the ventricle. The accompanying reproduction of the craniogram shows the ventricles displaced to the left and somewhat compressed. (Fig. 4.)



Fig. 4. Sketch of chronic subdural clot exposed at operation.

A diagnosis of chronic subdural hematoma compressing the right frontal lobe was made.

On the same day a decompression was effected over the right side through a muscle-splitting inci-

sion and a liquefied hematoma containing at least a half pint of old blood was evacuated. Patient's condition rapidly improved and he was discharged from the ho pital on the seventh postoperative day. (Fig. 5.)



Fig. 5. Photograph of patient. Case 3. Simple decompression type of incision on 12th postoperative day.

CASE NO. 4: S. T. Seen in consultation with Dr. Carl Leede at Columbus Hospital, October 27, 1930.

The family gives a history that patient has suffered from continuous headaches for a number of months, as far back as a year. There was no history of an injury. Lately they have noticed mental retardation and during the last week he has been in a state of coma.

Examination: Patient in deep coma. Slight movements about the mouth and no response when painfully stimulated, strong left Babinski, Oppenheim, and Gordon. Deep reflexes practically abolished and the abdominals absent. Eyegrounds show moderately advanced choking of the discs, about  $2\frac{1}{2}$  diopters on the right 2 diopters on the left. Neck is slightly rigid. Pulse 45. Temperature,  $100^{\circ}$  F. Mild leukocytosis (13,000).

A diagnosis of chronic subdural hematoma involving the right celebral hemisphere was made and on the same evening, October 27, 1930, under novocaine block, a subtemporal exploratory decompression was performed with evacuation of a large, well-organized hematoma containing liquefied blood. The capsule about the hematoma was tough and was discovered only on exploration of the upper part of the hemisphere, lying along the superior longitudinal sinus. Following the operation the patient responded and was able to carry on a conversation with his family. Dehydration measures were instituted. In spite of energetic postoperative treatment,

hyperthermia developed on the third postoperative day, and he expired.

CASE NO. 5: A. E. B. Age 62 years; occupation, stevedore. Seen in consultation with Dr. O. F. Lamson at Swedish Hospital, Sept. 4, 1931.

There is a history that about two months ago he began to suffer from severe headaches occurring chiefly during the night but more or less continuous. The headaches seemed to be localized more on the right side of the head. There was no history of an injury, although he admits straining himself on one occasion by lifting a large case of salmon and noticed that evening that he developed a severe headache, which has persisted up to the present time. About a month ago he awoke one morning and noticed that he could not see out of the right half of each eye.

Examination: A homonymous hemianopsia on the right side of the face. The eyegrounds were somewhat full but cupping was present and the margins clear. The veins were slightly tortuous and congested, the left grip weak and definite astereognosis present. Patellar reflexes practically abolished.

A lumbar puncture was performed. Pressure was 12 mm. in the reclining position. Fluid clear.

A direct puncture of the ventricle, with insufflation of air, was considered advisable to more accurately localize the lesion. In the presence of the hemianopsia and the astereognosis, it could not be determined whether the occipital or temporal lobe was involved.

A direct puncture was performed on September 4, over the left occipital region, and about 20 cc. of fluid removed and replaced by 20 cc. of air. Craniograms were then made which showed the right ventricle entirely obliterated and the left ventricle dilated and displaced to the left. (Fig. No. 5.)

A diagnosis of chronic subdural hematoma was favored, although, in view of the involvement of the optic pathways, a subcortical tumor involving the right occipital lobe could not be eliminated.

A right-sided osteoplastic flap operation was performed, with evacuation of a large subcortical and subdural hematoma with large quantities of fluid. The clot was organized over and in the right occipitoparietal lobe. Immediately following the operation, patient noticed a return of sensation in the hand and improvement in vision.

He was discharged from the hospital on the seventh postoperative day, considerably improved.

CASE NO. 6: F. W. A middle-aged white male seen at Ballard Eagles Hospital, October 29, 1930.

Patient's wife gives a history that two weeks ago he was in a brawl and fell, striking his head. He bled from the left ear. He was in the hospital for 24 hours and then was discharged to his home. He continued to have severe headaches, chiefly during the night, with nausea and vomiting. The headaches became very severe and on October 28 he was re-admitted to Ballard Eagles' Hospital in a state of coma.

When examined he was in a deep stupor and could not be arou: ed. There was a strong right and left Babinski, Chaddock, and Oppenheim. Deep reflexes on the left side were decreased. There was apparent weakness of the left side of the body. The right pupil was slightly larger than the left and unresponsive to light. The eyegrounds appeared normal in every respect. Respirations were slow and shallow.

A lumbar puncture was performed with patient lying quietly on the side. Pressure was 8 mm., with a very faint amber-tinted fluid.

A diagnosis of chronic subdural hematoma was made and on the evening of October 29, under novocaine block, the right side of the head was explored through a subtemporal decompression opening. Immediately beneath the dura, covering the entire side of the hemisphere as far as could be ascertained, was a well-encapsulated hematoma partly liquefied and partly clotted. This was about two inches in thickness and dislocated the hemisphere so that, on removal of the hematoma, there was a dead space between the dura and cortex of approximately 1½ inches.

Following the operation there was no improvement in his condition and the following morning the left side was explored. The cortex appeared compressed but there was no evidence of a hematoma. There was no improvement following the second operation and, in spite of active dehydration, hyperthermia developed, temperature rising to 106 degrees, and patient expired. Postmortem examination declined.

CASE NO. 7: V. M. Seen in consultation with Dr. W. C. Calvin at Seattle General Hospital, October 6, 1931.

There is a history that two weeks ago he was struck over the left side of the head by a bandit. He was treated at the City Emergency Hospital and then transferred to the Seattle General Hospital, where he remained for about three days, and then was released to his home. Ever since the injury he has suffered from severe headaches occurring principally during the night. These have been more or less continuous. There has been no nausea or vomiting. It was observed by the family physician that two or three days following the injury patient was unable to enunciate clearly. This lasted several days but gradually cleared up.

On examination, the following positive signs were found: The right pupil was slightly larger than the left. There was a healing lacerated wound over the left frontal region, about an inch long, with greenith-blue discoloration under the scalp extending over an area about the size of the palm of a hand. There was some tenderness around this area. The disces showed a mild congestion of the veins with obscuration of the margins of the discs and obliteration of the physiological cupping, more noticeable on the left side. His speech was slightly thick. The right grip was deficient as compared with the left and there was absence of the abdominal and tendon Achilles reflexes.

A lumbar puncture was performed with patient lying quietly on the side. The pressure was about 20 mm. and the fluid faintly xanthochromic.

A diagno is of subdural hematoma was made and decompression advised.

In view of the history of transient aphasia and the pupillary inequality, it was decided to explore the left hemisphere. Under novocaine block, a subtemporal decompression incision was made and the dura exposed. This was tense, bluish and bulging. On incision, a large, partly liquefied hematoma was removed by irrigation and brain spoon and the wound was closed without drainage. Convalescence was uneventful.

CASE NO. 8: M. M. Age 53 years. Married. Occupation, housewife. Seen in consultation with Dr. J. J. Sims at Swedish Hospital, October 28, 1931.

A history was obtained that on October 23 she fell down a short flight of stairs in her basement, striking on the right side of her head. She was unconscious for a short period. After about three days she began to complain of violent headaches. She vomited several times and, about the fourth day after her accident, her husband found her in a stuporous condition and she was brought to Swedish Hospital in a stupor.

Examination showed a small laceration, healing, in the right frontal region, with a small amount of discoloration about the area. There was no local tenderness. The neck was very rigid, Kernig sign was positive, the fundus showed a beginning venous engorgement with tortuosity of the ophthalmic veins but preservation of the physiological cupping. Pupils were equal. The left side of the body showed a very definite hemiparesis, including the face, arm, and leg. Abdominal reflexes could not be elicited. There was a bilateral Babinski sign and absence of the patellar and tendon Achilles reflexes.

Lumbar puncture showed a pressure of 18 mm. with the mercury instrument. Fluid was xanthochromic, Wassermann 3 plus, and globulin positive (history of an old luetic infection many years ago with temperature ranged close to 102 degrees Fahrenheit and blood chemistry showed no abnormalities. Her temperature ranged close to 102 degrees Fahrenheit from date of admission to the hospital, pulse between 80 and 90, and respirations 20. X-ray was negative.

A diagnosis of chronic subdural hematoma was made, favoring the right side, although, with a bilateral Babinski sign, the possibility of a bilateral hematoma or contrecoup pressure from a clot on the right side, could not be overlooked.

On October 28, 1931, under 1 per cent novocaine block, an incision was made on the right side and dura exposed. There was increased intracranial pressure and the dura was tense and bluish in appearance. On incision and reflection, there was a definitely organized hematoma with a thin capsule. On rupturing this, there was extrusion of a copious quantity of partly clotted, partly liquefied blood under pressure. Wound was closed without drainage.

There was some improvement in patient's condition during the latter part of the operation, and she was able to converse with the operators. The following day, her condition was not considered satis-

factory and it was decided to explore the left side. Accordingly, on the afternoon of October 29, 1931 under 1 per cent novocaine block, the left side of the skull was opened and the dura exposed. It was tense and had a bluish appearance. On incision there was extrusion of a copious quantity of dark, liquefied blood clots under considerable pressure. The dura was left open and the wound closed without drainage.

Following this latter procedure, patient's condition improved markedly and, with continuous dehydration of 50 per cent glucose, 50 cc. twice daily, together with rectal injections of magnesium sulphate, 50 per cent, her condition improved to such extent that she rapidly emerged from coma into complete consciousness.

The sutures were removed on the third postoperative day, and convalescence was uneventful.

#### SUMMARY

- 1. History of a mild head injury, with subsequent interval free from symptoms, followed in the course of time by insidious development of signs of increased intracranial pressure.
- 2. Motor and sensory involvement, slowly developing hemiparesis.
- 3. Eyeground changes usually observed late in the condition, but not invariably (some terminal cases with normal eyegrounds).
- 4. Cerebrospinal fluid may or may not be xanthochromic, and pressure may be normal or increased.
- 5. Pathological lesion is a simple cystic accumulation of blood in the subdural space, surrounded by a well-developed capsule, with numerous reticulo-endothelial cells.
- 6. Bilateral subdural hematomata are occasionally found.
- 7. Treatment: either osteoplastic flap operation, subtemporal decompression, or multiple trephine openings, depending upon the whim of the operator and condition of the patient. Dehydration.
  - 8. Eight cases reported.

#### REFERENCES

- 1. Virchow, R.: Hematoma dura Matris, Verhandl. d. phy. Med. Gesellsch 7:134, 1857, and Virchow's Pathology, A. Hirschwald, Berlin, 1858.
- 2. Trotter, W.: Briti h Journal Surgery, Vol. 11, 1914, p. 271.
- 3. Putnam, T. J.; and Cushing, H.: Chr. subdural hematoma, Arch. of Surg. 11, Sept., 1925.
- 4. Jelsma, F.: Chr. subdural hematoma, Arch. of Surg. 15:45-46, July, 1927.
- 5. McConnell, A. A.: Subdural hemorrhage following trivial accident, Irish Journ. of Med. S. C., pp. 160-161, April, 1930.
- 6. Biemond, A.: Traumatic subdural hematoma which existed five months before operation was performed, Case. Med. Tij. d' Shi. V. Geneesk, 1:664-667, Feb. 9, 1929.

- 7. Putnam, T. J.; and Cushing, Harvey: Chr. subdural hematoma, its pathology, its relation to pachymeningitis hemorrhagica and its surgical treatment. Arch. of Surg. 11, Sept., 1925.
- 8. Stewart, Sir Purvis: The diagnosis of nervous diseases, Arnold, 6th Edition.
- 9. Griswold, R. A.; and Jelsma, F.: Relationship of chr. subdural hematoma and pachymeningitis hemorrhagica interna; report of 8 cases, Archives of Surgery, 15:45-46, July, 1927.
- 10. Fleming, H.; and Jonse, O. W.: Chr. subdural hematoma, Surg. Gyn. & Obst. Jan., 1932, 54, 1, p. 81.
- 11. Craig, W. M.: Chr. subdural hematoma, Surg. Clinic No. America, 7:1523-1529, Dec., 1927.

### SPINAL ANESTHESIA

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From the start of civilization, man has endeavored to discover means whereby the senses could be dulled to pain and grief. Innumerable attempts were made to accomplish this during the early ages by mechanical means and through the use of drugs for internal and external application and various concoctions for inhalation. Many references of this nature are to be found in existing chronicles, and the mythological and religious literature of the ancient world.

In the classic age of Grecian literature, Homer writes in his Odyssey that Helen of Troy put a drug into wine to "lull all pain and anger, and bring forgetfulness of every sorrow." Herodotus, the Greek historian, later records the inhalation of fumes from a variety of hemp by the Scythians which caused an exalted mental state and sleep.

At an early date, hashish and other drugs were employed in Egypt. Narcotics were used by the Jews and Chinese on criminals to produce a weakened mentality for confession of crimes and to alleviate the agonies of their death struggles. The Chinese and Assyrians used drugs to relieve the anguish resulting from the rough surgery of those times.

Pliny and Dioscorides, at the beginning of the Christian era, describe several methods then in vogue for benumbing areas preceding incision and cauterization, but up to and during the Middle Ages little real progress was made. The methods generally employed to prepare patients for surgery at the beginning of the nineteenth century were: Either the extensive use of opiates; intoxication with alcoholic beverages; the application of ice or freezing salts to

cause local insensibility; or a combination of these applications. The patient generally had to be held on the table and suffered intensive shock and agony during the operation.

Although ancient, medieval, and modern history furnish numerous examples of the use of drugs and other media to bring about partial or complete insensibility, it was not until well into the nineteenth century that the beginning of surgical anesthesia can be said to have actually appeared. The struggle to find the ideal method is still raging, and one by one the various new drugs are placed in the discard. The probabilities are that there never will be the ideal, universal anesthetic, but pioneering has gone on and on and just now we are re-opening a field once or twice deserted, and, with refinements, it promises to be one of greatest benefit.

The profession is still widely divided upon the merits and demerits of spinal anesthesia and one finds equally distinguished authorities standing at both ends of the controversy. There are those who never use it, and never would, and, at the other extreme, those who would use it and do use it for every operative procedure, without regard to its location—even for head operations.

I well recall sitting in a certain distinguished surgeon's clinic in an eastern teaching center and hearing him rather bitterly denounce a fellow-worker in the same city, who was then pioneering in spinal anesthesia, for using such a dangerous method; then, three years later, sitting in the same clinic and seeing the same surgeon do almost his entire morning list of cases under spinal anesthesia. This only shows that wise men change their minds, and that good pioneering had accomplished its purpose and made what, to this surgeon's mind, had been a dangerous method, a safe one. So controversies are good things, because they bring out all the obtainable facts and stimulate the protagonists into intensive search for better and safer methods and improvements. There is, no duobt, a certain definite set of indications and contraindications to almost every surgical procedure.

Spinal anesthesia is known also as: (1) intra-dural anesthesia; (2) lumbar anesthesia; (3) sub-arachnoid anesthesia or block. The last is probably the most correct term as it describes the method on an anatomical basis.

Although really originating in this country, subarachnoid block has been a rather recent comer as a practical method in our American clinics, but has known extensive use in certain European and Latin-American countries. Corning, in 1885, first attempted to influence the spinal cord by injecting a solution of cocaine between the spinous processes of the vertebrae. He did not expect to penetrate the dura, but this probably did happen, since loss of sensation and motion in the lower extremities was produced, a condition which does not result unless the puncture and injection is intradural. Although Corning suggested the feasibility of the method for the production of anesthesia in surgical operation, its significance was evidently not understood and no practical method resulted.

The lumbar puncture of Quincke was of great importance for further progress and when this procedure became established as a diagnostic and therapeutic method, a further step towards spinal anesthesia was easier.

To Bier belongs the credit of having purposely produced surgical anesthesia by injection of anesthetic drugs *into* the spinal canal. In 1899 he published the results of eight anesthesias, which he had practised upon himself, his assistant, and six patients. The wide-spread use of the method, despite Bier's warnings, was followed by a rapid abandonment owing to the dangerous symptoms produced by cocaine.

In 1891 Biessel isolated tropococaine from the leaves of the Java cacao plant. The toxicity of this drug is about half that of cocaine, and it has ever since enjoyed great favor in Germany. It was not, however, until 1904, when Fourneau discovered stovaine, that spinal anesthesia was again brought before the profession. The same year Einhorn introduced novocaine, which was found much less toxic than any of the anesthetic agents known. Its combination with adrenalin gave it a high practical value in the method of local anesthesia, and for this it is still considered the ideal drug; but injected intradurally it was disappointing and the pioneers of spinal anesthesia went back to the stronger drugs. The ill-effects of these drugs and occasional fatalities form the basis of many adverse reports relative to spinal anesthesia. In the meantime, long, careful experiments were conducted with novocaine and it is now the drug of choice and has placed spinal anesthesia upon a firm footing as a logical procedure.

### METHOD

Naturally, when dealing with a procedure which, for many years, has met with considerable opposition, especially on the part of those who had little or no experience of its principles, one should be cautious about trying too many procedures and experimenting with several different technics. There are various methods, differing now mostly in the solvent

for the anesthetic drug. Some workers use a solvent heavier than the cerebrospinal fluid; others, a lighter one; still others use no foreign fluid as the diluent, but use the cerebrospinal fluid itself.

Dr. George P. Pitkin, of Teaneck, N. J., has succeeded in producing a solution and method which, he claims, allow complete and easy control of the extent of the anesthesia. The claims for his method are very alluring and it is receiving quite extensive application in many clinics. His anesthetic solution is marketed in ampules of 25 cc. size, and 3 cc., containing 200 mgs. and 300 mgs. respectively of novocaine, strychnine sulphate 2.2 mgs., in a special solvent consisting of alcohol, sterile water, with the addition of any amylo-prolamin combination (a type of starch). It is claimed that the viscous character of this solution prevents diffusion in the spinal fluid, and that it floats like the air-bubble of a spirit level on the spinal fluid, and thus the height of the anesthesia is controlled by regulation of the angle of the table.

The other generally used method uses the cerebrospinal fluid as a solvent and, as the anesthesia is quite satisfactory, its simplicity makes a strong appeal to many operators. This is the method with which your essayist is most familiar and the one which will be detailed here. It is not offered as the best or safest, but as one which has given a large percentage of ideal anesthesia without untoward effects of any sort.

### ANATOMIC CONSIDERATIONS

The spinal cord in the adult extends to a level of the upper border of the second lumbar vertebra where it becomes continuous with the filum terminale, which extends as a bundle of connective tissue to the termination of the dural sac at the second or third sacral vertebra. The spinal cord and cauda equina are surrounded by the same membranes as the brain—dura, arachnoid, and pia. The dura is a loose sheath not attached to the bony framework of the spinal canal, but separated from it by loose areolar tissue containing a plexus of veins, which are most numerous in the front and on the sides.

The space between the spinous processes of the 3rd and 4th lumbar vertebrae is larger than either the 1st, 2nd, or 5th. Here also the nerves making up the cauda equina are arranged in two more or less distinct lateral bundles; hence, these interspaces are considered the ideal ones for entrance of the needle, as the interspace is more easliy entered and there is less danger of injuring any nerve trunk with the point of the needle.

#### INSTRUMENTATION

The instruments consist of those for skin preparation and a couple of sterile dishes; sterile distilled water; and proper syringes and needles. While a special syringe is not absolutely necessary, it should not leak and the plunger should run easily. Formerly puncture was made without anesthetization of the skin, but broader experience has proved that it is not only more comfortable to the patient to anesthetize the skin first with 1/2 per cent of novocaine, but that such anesthetization also facilitates the puncture of the dural. Two spinal puncture needles are always used, to provide against some accident happening to one. The spinal needle should be of medium gauge so as to avoid too rapid flow of spinal fluid, and leave a very small puncture wound of the dura-one capable of immediate closure on withdrawal of the needle. Its length should be such as to allow the hand to be supported against the patient while the hub of the needle is held between the thumb and forefinger. The bevel should be short so that, when it has entirely perforated the dura, the point does not prick the cord or cauda equina. It must be unbreakable but should not bend too easily. Steel needles are damaged by rust and are apt to break. Platinum needles are too soft and become crooked after a few punctures. Nickeloid needles are best. The stylet should fit exactly and run smoothly.

The anesthetic drug is put up in ampules with rather large, long necks. It is in an anhydrous state and of the greatest purity, and comes in various dosages, as 10 mg., 12 mg., 15 mg., 20 mg., and 30 mg.

### PREPARATION OF THE PATIENT

The patient should be brought into as helpful a frame of mind as possible through suggestion, and the operation should be undertaken with all the preliminary care as to psychical influences which is observed with general anesthesia. The role of the nurse is most important here, and that nurse who has had the experience of many cases done under spinal anesthesia is of inestimable value with such preparation. A hypodermic of morphine, gr. 1/4, with scopolamine, gr. 1/200, or atropine, gr. 1/150, is given one hour before anesthesia is induced, except in very weak patients whose vital organs are seriously affected.

### TECHNIC OF INJECTION

The syringe and needles should be thoroughly washed out with sterile, distilled water to make sure they are clear and working properly, and to remove

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any alkali adhering from sterilizer water, as novocaine action is inhibited by alkali.

The patient is now caused to assume the sitting position, with the legs hanging down and with the feet resting on a stool; the body is bent well forward, with the arms folded across the abdomen. A nurse should stand in front of the patient and place her hands upon the patient's shoulders to steady the patient and prevent bending laterally. If the patient's condition is such that he cannot take the sitting position, puncture can be made by turning on the side, with the knees and chin approaching as closely as possible.

Formerly it was our custom not to give ephedrine until puncture and injection of the anesthetic was complete, but latterly we have noted that the intramuscular injection of ephedrine about ten minutes before anesthesia is completed, using one or two grains of ephedrine, has resulted, in almost every instance, in avoiding the sudden drop of blood pressure which tends to occur after spinal injection of novocaine. Since adopting this time for the injection of the vasomotor stimulant, we seldom have a patient exhibiting pallor, sweating, or nausea.

The whole back is now painted with a solution of mercurochrome, from the point of contact with the table upward to the lower angles of the scapulae and laterally to the midaxillary line. Sterile towels are placed across the table immediately back of the patient and here, ready to hand, are placed the syringe with one needle attached, the needle to be used for the puncture, a few small gauze sponges, and the ampule containing the novocaine, the top of which has been previously filed and broken off. The interspace to be used is now located by finding the crest of the ilium, as a horizontal line connecting the crests runs either through the spinous process of the 4th lumbar vertebra, or just below it. The spot to be punctured is now definitely indicated by rubbing away some of the mercurochrome stain, and with a fine needle an intradermal wheal is raised, using 1/2 per cent novocaine and about 11/2 cc. of the same solution is injected into the interspinous ligament. In about one minute the spinal needle may be painlessly entered through the wheal.

With the greatest care to remain exactly in the midline, the needle is advanced, as a rule easily, through the interspinous ligament, and, if the direction is correct, no distinct resistance will be met until the dura is reached. Advance now continues with a distinct jump of the needle and a "snap" is communicated to the fingers of the operator as it

penetrates the dura. Withdrawal of the stylet is at once followed by a flow of the cerebrospinal fluid. When absence of blood or cloudiness shows no damage has been done to veins and that there is no intraspinal pathology, the opened ampule is held under end of needle until almost filled. The stylet is carefully replaced to stop flow of fluid while novocaine is being put into solution in the ampule. This solution is accomplished by repeatedly aspirating into the syringe and expelling again into the bulb of the ampule, and, when finally complete, the solution is aspirated into the syringe and all air is expelled. The stylet is now carefully removed from the spinal needle and the syringe is tightly attached thereto. The syringe is slowly filled with cerebrospinal fluid. Half of this is slowly injected, more new spinal fluid is aspirated and a greater amount injected, until, at the end of four or five such maneuvers, the syringe is emptied. The needle is then quickly withdrawn.

An intelligent attendant sitting at the patient's head is a wonderful asset. It adds much to his mental ease during the operation if his attention is engaged by conversation, not merely for the sake of diverting his attention to some other topic, as in the case of local anesthesia, but to put his brain to active work. Questions requiring long answers are best. Every now and then the patient is asked to take a few deep breaths. Breathing through the mouth is of especial advantage in abdominal and pelvic opcrations, as it relaxes the pressure on the diaphragm. The application of cold, wet sponges, often renewed. on the lips, forehead, and neck, is highly appreciated by the patient, and minimizes the tendency toward nausea and vomiting. If nausea sets in despite the cold sponges, the nostrils of the patient should be closed by pressing between the index finger and thumb, so as to compel him to breathe through the mouth.

It should be explained to him that when anesthesia is established he will be unable to move his leggand that the lower half of his body will "go to sleep." He should be assured that there will be no pain, although he may feel the surgeon working.

Except in gastric surgery he may be allowed sips of water, or allowed to eat small pieces of ice.

### FAILURES

Failures occur in about 5 per cent of patients, even with skilled administration. This includes cases of complete failure, partial, incomplete, or unilateral anesthesia, and short or delayed anesthesias. It is no crime to have to resort to general anesthesia, and as one's skill increases, the failures become fewer. If

the operative procedure requires more than an hour, it will probably be found necessary to complete with inhalation narcosis, but usually the amount required is very small.

### AFTER-EFFECTS AND THEIR TREATMENT

The after-effects incidental to intraspinal block are apt to occur at periods more or less close to the time of injection. The immediate symptoms are the outward expression of a series of phenomena which are chiefly dependent on the sudden lowering of the blood pressure: Pallor of the face, sweating, complaint of feeling sick, then nausea and vomiting. The respiration becomes shallow and infrequent. All these symptoms are now entirely absent or very slight, since using the routine injection of ephedrine before anesthesia is induced.

Nausea and vomiting will occur occasionally in the Trendelenburg position and in the course of operations on the organs of the upper abdominal cavity, especially the stomach. If the psychoanesthetist is alert, such occurrence can almost always be avoided by requiring the patient to take a few deep breaths.

Real respiratory failure, when it occurs, is a serious matter, and the surgeon or the person responsible for the anesthesia must attend closely and be given every assistance by the remainder of the operating staff.

If it is necessary to complete the operation with the aid of general narcosis, care must be exercised to give it gently and gradually, watching the respiration, especially when inhalation begins, as some patients hold their breath at that moment, and faint.

If operative conditions permit, it is customary to give the patient a cup of hot, black coffee, soon after he has been returned to bed. It should be taken slowly, in small sips. There is no established rule for the position of the patient in the bed; any comfortable position may be permitted after two hours have elapsed from time of introduction of the anesthetic.

Inasmuch as the sphincters are relaxed, due to the anesthetic effect on the sympathetic nervous system, it happens, once in a while, that a patient evacuates the rectum or bladder during the operation. This is not only somewhat annoying, but fraught with some danger in gynecological operations in the Trendelenburg position, unless prepared for in advance, as the feces are liable to soil the operative field, and, is especially dangerous in complete hysterectomy. It is, therefore, advisable not to give a cathartic the day preceding operation; to attempt through cleansing of the colon by at least two soda enemas the

day before; and I make it a practice to prepare the vagina surgically and pack it fairly tightly in all cases in which the surgical attack is likely to involve the uterus. This incontinence wears off with the rest of the anesthesia and is never persistent. Retention of urine occurs, but not more frequently than with general anesthesia, and yields just as easily. Ocular palsies, especially of the abducens, is mentioned by some writers, but I have never encountered a case. Likewise, headaches seem to give some oprators a great deal of trouble, but I have never had a case which did not yield quickly and easily to aspirin.

### INDICATIONS

There are certain conditions which emphatically indicate the employment of spinal block: (1) The "acute abdomen." Here the perfect anesthesia is realized, with complete muscular relaxation of the abdominal muscles, and, because of the effect on the sympathetic nervous system, the bowels have become flat and lose their tendency to crowd the operative field. This is what the French call the "silent abdomen," a most precious condition for easy and efficient exploration of the entire abdominal cavity and manipulation of the diseased viscus. The anemia resulting from the fall of blood pressure adds another valuable element to this abdomen, and it is quite universally conceded by those familiar with this form of anesthesia that the mortality of the "acute abdomen" is greatly reduced, and that gas distention and spastic ileus are rarely encountered. The advantages of spinal anesthesia are particularly evident where operative intervention is required in tuberculosis, bronchitis, emphysema, asthma, cardiac diseases, pvelitis. diabetes, acidosis, hypertension, alcoholism, and drug addiction. Acute conditions of the abdominal cavity are greatly benefited by its use in very fat patients. It is an almost ideal anesthetic for any type of operation below the level of the umbilicus, especially those of the pelvis and lower extremity.

### CONTRAINDICATIONS

The chief contraindication to spinal block is a very low blood pressure, that is, below 100. Even here it may be used by using a sufficient amount of cardiac and blood vascular stimulants. Patients in a state of shock or toxemia need only local infiltration, with or without the addition of a light inhalation narcosis. It is obvious that pathological conditions of the spine, tumors of the brain, contraindicate its use. Lesions of the skin in the lumbar region may make lumbar puncture dangerous! When the cerebrospinal fluid is cloudy, the injection had

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best not be made. Children under sixteen are not good subjects. As in local anesthesia, highly nervous and excitable persons are poor subjects for spinal anesthesia, and, when it is tried in such, recourse to general narcosis is frequently demanded.

#### ADVANTAGES

The advantages are many and have been mostly indicated in the preceding discussion, and they increase with increasing use, experience and added skill of the administrator. Also, if the surgeon is not the anesthetist, and will revamp his operative technic slightly to fit the anesthesia a little better, the results and advantages are increased.

There is only one real disadvantage connected with intraspinal block; the anesthetic agent cannot be administered gradually until the stage of surgical anesthesia is reached, but the full dose must be injected at once; and the fact that, when it has worn off, a second injection cannot well be made. Failure to obtain full anesthesia happens occasionally; it is sometimes delayed in onset, or does not reach to the desired level. Most of these incidents, which are reckoned against spinal anesthesia, occur less and less frequently as the skill of the operator increases.

I believe it may quite confidently be predicted that, with the introduction of new hypnotic anesthetics such as amytal and invertin, the next step toward ideal anesthesia will be a basic anesthesia first induced by the use of one of these drugs, and then the use of either spinal or regional methods for the essential anesthesia. Here lie alluring fields, but that is another story.

#### BIBLIOGRAPHY

- 1. Genesis 2:28.
- 2. Odyssey IV.
- 3. Talumd.
- 4. Matthew 27:34.
- 5. Mark 15:36.
- 6. John 19:29.
- 7. Proverbs 31:6.
- 8. Pitkin, Geo. P., Journal of Med. Doc., N. J., 1927.
  - 9. Labat Gaston, Regional Anesthesia.
- 10. Ferguson and North, Surg. Gynec. & Obst., 54, No. 4, 1932.

### DISCUSSION

DR. R. D. KENNEDY (Globe): I have found spinocaine, which is put out by the Merck Company, very satisfactory. It is injected with the patient on his side. The height of 'the anesthetic is determined by the amount injected and the elevation of the upper part of the body. The patient is turned on his back immediately and put in the Trendelenberg position as soon as desired height is obtained. This anesthetic lasts about forty-five minutes; in one case I had it lasted an hour and a half.

DR. G. R. STEVENSON (San Diego, Calif.): 1 notice that there has been much favorable comment without the report of an unfavorable result. It is true, however, that a number of fatalities have occurred in the most experienced hands. A very competent urologist I know has been using it successfully for six or seven years without a single fatal result until the case I shall mention. In this case the anesthetic had just been completed, the patient had been draped and no operative procedure had taken place, when the patient stopped breathing, duc to respiratory failure which we could not explain. Spinal anesthesia is not as free from danger as we are led to believe by some of the over-enthusiastic. Especially is this true if universally chosen as an anesthetic by the inexperienced and infrequent operator.

We have felt justified in administering ephedrine at any time during the operation if the fall in blood pressure warrants it.

DR. C. E. YOUNT (Prescott): I, too, had noticed the absence of unfavorable comment on the use of spinal anesthesia.

Back in 1900 we used fourth-grain tablets of cocaine, resulting in terrific headaches. By 1904 we had learned to use tropococaine with the spinal fluid as a solvent. Our technic had improved and the patient was relieved of much discomfort.

I agree that it is most useful in operations on the lower abdomen and the lower extremities, also in eclampsia cases, which, in this entlightened day, are not supposed to occur, but somehow do, anyway. Spinal anesthesia does not overload the already overburdened eliminative organs. But the fact remains that when the plunger has gone home for the last time, and the anesthetic has been allowed to flow into the spinal column, it can never be recalled, and cannot be influenced by the position of the patient, regardless of what others may state to the contrary.

DR. HARLAN SHOEMAKER (Los Angeles, Calif.): We have a few minor differences in the administration of spinal anesthesia. Ephedrine given prior to the spinal puncture invariably controls the loss of blood and attending nausea. We have been able to cut out one of Dr. Adamson's steps by having our needles, syringes, and other equipment autoclaved. Even a slight amount of salt in the sterilizing water upsets the activity of the drug introduced into the spinal fluid. In one case, after I was sure that my needle was in contact with the spinal fluid, it refused to flow. A few drops of oil were found on the stylet, probably left by an instrument nurse cleansing the needle. All of our injections are made with the patient lying on his side and shoulders parallel.

The x-ray pictures of patients for whom a spinal anesthetic is contemplated frequently show arthritic exudate on the vertebrae. If we had not had this picture, we might have been held responsible for a certain amount of low back pain.

We determine the level of anesthesia by the amount of fluid withdrawn, and the duration of an-

esthesia by the size of the dose. It is a wise precaution to test the level of anesthesia prior to an incision. We use only one withdrawal of fluid and one injection, and waste not a single drop of spinal fluid.

Particularly in fractures of the lower extremities is spinal anesthesia valuable. No amount of etherization can produce the complete relaxation secured with spinal anesthetic. One of its characteristics is the suddenness with which its effects wear off. On an average, 150 mg. dose of anesthetic persists in its effect for forty-five minutes.

In giving a spinal anesthetic with the patient on his side, it is of utmost importance that he be kept absolutely quiet, with his shoulders in a vertical position.

DR. J. E. BACON (Miami): This matter of establishing alibis before juries is very important. Spinal anesthesia is new and therefore not understood by the patient, although he can understand it when a cone is placed over his face. Years ago we regarded spinal anesthesia as a last resort to be used in extreme cases only, and this attitude persists to some extent.

We boil our anesthesia implements in distilled water. Another precaution I think worthy of attention is to make a very slight cut with a sharp blade in which to insert the needle, thereby obviating the possibility of carrying infection from the skin into the spinal canal on the needle.

DR. ADAMSON (closing): I am greatly pleased and flattered by the discussion provoked by my paper. I have gained a great deal from it. The possibility of using the autoclave for sterilization of implements had not occurred to me.

Taking an x-ray of a patient's back before administering a spinal anesthetic is a very wise precaution. We had a case of a man who fell from only an eighteen-inch scaffold and claimed a back injury. An x-ray of his back revealed arthritis of the whole vertebral column. We learned then that he had been treated extensively for it. Had he been given a spinal, he might have claimed it to be the cause of the alleged back pain. It is undoubtedly a good plan always to have an x-ray of the back before attempting spinal anesthetic.

The height of the anesthesia I can control only by the size of the dose of novacaine; 100 mg. is usually a sufficient dose for most procedures below the pelvis. We used 150 mg. during a Whitman operation of the hip. A soldered-in gallbladder cannot be cut out without some inhalation anesthesia. When the effects of the anesthetic begin to wear off, we can see the contracted gut ballooning and, a minute or so later, the patient complains of pain.

I prefer to make the administration of spinal anesthesia with the patient in the sitting position. It is necessary to use a much larger dose for an appendectomy than for a hysterectomy, because, although the organs are situated at about the same anatomical level, their enervation is from much different levels.

As for the needle best suited to this use, I like a

22-gauge, nickeloid needle, with the point beveled at 45 degrees.

Drs. Shoemaker and Kennery have mentioned the value of the use of spinal anesthesia in surgery of the lower extremities. This is especially true when the patient is suffering from shock. Do not be afraid to give the patient big doses, because it will give great relaxation and reduce shock. To the ordinary patient of 130 pounds, I give two grains.

I began using spinal anesthesia in 1924 and have never had a death or any untoward or alarming results.

It was through an accident that we learned the value of giving ephedrine before the completion of the anesthetic. The nurse gave it before we were through with the spinal, and the patient was found to get along better than when it was given afterward. We now give one to two grains of ephedrine ten minutes before spinal puncture and seldom see any of the disagreeable signs of blood pressure drop, such as pallor, nausea, vomiting, or sweating. Nausca and vomiting do occur in operations of the upper abdomen, but they do not in those of the lower extremities.

Another point worthy of mention is that spinal anesthesia will differentiate between a dynamic and an adynamic ileus. If one is confronted with this question, give 0.150 mgs. of novocaine by spinal puncture and, if the obstruction is of the adynamic type, the bowels will promptly evacuate.

### TRAUMATIC RUPTURE OF NOR-MAL SPLEEN; DELAYED SPLE-NECTOMY. RECOVERY.

By W. L. REID, M. D. Phoenix, Arizona

The normal spleen in its well-guarded position receives relatively few injuries. However, the organ is so vascular that these injuries result in a high mortality rate, particularly when there is prolonged delay of surgery. The following case is especially interesting in that operation was delayed nine hours and yet the patient recovered.

History: Eight months ago a young man of twenty, in splendid health, was cranking a high-powered car. As he succeeded and stepped aside, the racing motor caused the fan literally to "explode." One blade was driven through the hood of the machine with terrific force and struck the young man in the lower left thorax, knocking him down and stunning him momentarily. He was taken immediately to the nearest physician's office. After a short rest, the patient felt much better. The physician's examination revealed a small perforation, one-half inch long, in the ninth interspace at the anterior axillary line. It was bleeding steadily, but not profusely. A large contusion, four inches in diameter, surrounded the wound. There was a moderate amount of pain and tenderness in the left upper abdominal quadrant. JULY, 1932 293

especially under the costal margin. Beyond this, the physical examination was said to be negative. The wound was not probed but was cleansed with alcohol and painted with mercurochrome. One suture was taken in its edges "to stop the bleeding," and a sterile dressing was applied. The patient was then told that his injury was not serious and was advised to "go home to bed and forget it.' This was at 9 p. m. He reached home at ten o'clock and promptly went to bed. Five hours later he awoke suddenly with marked air hunger and with considerably more pain in the left abdomen. On attempting to sit up, he fainted. Regaining consciousness, he shortly managed to wake members of the family, who summoned a second physician. The wound was still bleeding. His night shirt and parts of the bed linen were saturated with blood. After examining the patient. the doctor diagnosed "internal hemorrhage," suspecting an intercostal vessel as the source. He administered one-fourth grain of morphia hypodermically and advised immediate hospitalization. The family demurred. A third physician thought the hemorrhage was coming from the chest and suggested immediate exploratory thoracotomy.

The patient was hospitalized at 5 a. m., eight hours after the time of injury. On the way to the surgical floor, he fainted again. The radial pulse was not perceptible. The resident physician, sensing the patient's desperate condition, promptly started a venoclysis of normal saline (1000 cc.) and glucose (200 gms.). External heat was applied and one-sixth grain of morphia (hypodermically) was given to prevent further shock. The patient rallied steadily and after thirty minutes felt much better. A careful examination was then made.

Physical Examination: The characteristic picture of profound hemorrhage and shock was quite obvious, and the pallor was extremely marked. The temperature was 97 degrees; the pulse, 147; blood pressure 80,62. The lungs were clear and breath sounds were normal throughout. A roentgenogram of the chest was negative. The abdomen was slightly rigid on the left side and particularly tender to moderate pressure along the left costal margin. Percussion revealed shifting dullness along the entire left side, especially noticeable in the flank. During the examination the wound began to bleed more freely.

Diagnosis and Operative Procedure: A diagnosis of ruptured spleen was made and the patient was operated at 6 a. m. (nine hours after time of injury). The abdomen was opened under local anesthesia and the diagnosis verified. The spleen had received a perforating wound near the hilum and also a rupture almost its entire length on the external surface. Under ether inhalations, splenectomy was performed. During the operation, 500 cc. of normal saline and glucose were given intravenously. The abdomen was drained through the original perforation and the incision was closed in the usual manner. Before the patient left the operating room, a direct transfusion (600 cc. of whole blood) was given.

Convalescence: The immediate postoperative condition was fairly good. A second transfusion was given the following day. Recovery was uneventful. The abdominal incision healed promptly. The drain was removed on the tenth postoperative day, after which the perforation healed rapidly. The patient was dismissed from the hospital on the seventeenth postoperative day, in excellent condition.

### DISCUSSION

This case illustrates how easily an extensive rupture of a normal spleen may be entirely overlooked, particularly when the patient is seen immediately after an injury of this type. Early symptoms and findings are vague, and, at best, are only suggestive even when the examiner is keenly alert to the possibilities. The small perforation and the patient's tendency to minimize his injuries served to veil the true picture. The severe contusion, the location of the injury, and the history that the victim was "knocked down and stunned momentarily," were valuable "leads." The symptoms of massive hemorrhage and shock, which followed later, left little doubt as to the diagnosis.

When I first saw this patient, he was in a state of collapse. Immediate surgery would doubtless have been fatal; such a patient must always be rescued from systemic shock before additional—operative—trauma is imposed. Delay beyond a certain point would have been equally disastrous. Fortunately, this was avoided by the patient's prompt response to external heat and the venoclysis. The transfusion replenished a badly depleted vascular system and prevented recurrence of shock. Morphia given at frequent intervals during the first twenty-four hours provided the much needed rest and freedom from pain.

The mortality which follows operations of this type depends largely upon the extent and severity of associated trauma and the amount of hemorrhage and shock. In Dretzka's series, the total mortality was 37 per cent. However, in his uncomplicated cases, the death rate after splenectomy was only 12 per cent.

Eight months have elapsed since the operation. The patient is in splendid health; the blood picture within normal limits.

The spleen is only one of a large group of tissues of similar function, and this explains why its removal causes little or no change in the functions of the body. Leo<sup>2</sup> recently reported a case with a practically normal blood picture twenty-one years after splenectomy for wound of the spleen. As W. J. Mayo<sup>3</sup> so aptly said, "the spleen is much more important pathologically than physiologically."

#### REFERENCES

- 1. Dretzka, Leo. Rupture of the spleen. Jour. S. G. and O. 258-261. August, 1930.
- 2. Leo, G. Bull. et mem. Soc. de chirugiens de Paris. 23: 274-277. May 1, 1931.
- 3. Mayo, Wm. J. Surgical aspects of diseases of the lympoid organs, with especial reference to the spleen. Collected Papers of the Mayo Clinic and Mayo Foundation. Vol. 21, 1929.

### TWO CASES OF TULAREMIA TREATED WITH INTRAVE-NOUS MERCUROCHROME.

JIM CAMP, M. D. and J. HILLIARD CAMP, M. D. Pecos, Texas.

The two cases herein referred to were in the same family, presented rather typical text-book pictures of the glandular type of tularemia; gave history of having skinned wild rabbits; and the blood of the patients gave a positive reaction for tularemia.

B. W. M., a young adult male, previously in good health, skinned two wild rabbits March 19, 1932, and had onset of tularemia March 24, 1932. On the 14th day after onset of illness, at which time he was running an afternoon fever to 102.5° F. he was given 10 cc. of a one per cent solution of mercurochrome intravenously. There was a moderately severe mercurochrome reaction, consisting of abdominal cramps, mild vomiting, and diarrhea lasting for about twenty-four hours. Forty-eight hours after the administration of mercurochrome, the patient's temperature was normal and has remained normal since. He has felt well, returning to work on the fourth day after mercurochrome. The ulcer at site of inoculation, on the finger, began an immediate improvement, but required about ten days for complete healing. This patient had one very large lymph-node at the elbow and a smaller one in the axilla; the axillary gland very slowly reduced in size and finally disappeared. The epitrochlear gland failed to resolve, remaining very hard, though painless, until about three weeks after mercurochrome, when it broke down and had to be evacuated.

Mrs. N. E. W., aged 62, mother-in-law of the first patient, was exposed to the same rabbits and had onset two days earlier. Because of her very bad general condition, a severe mercurochrome reaction was feared and she was given her medication in divided doses. Treatment was started on the twentieth day, at which time she was running an afternoon fever of 103° F. She was given 3 cc. of a one per cent solution, intravenously, with a mild reaction lasting about an hour. On the 22nd day of her illness, she was given 4 cc. of a one per cent solution, intrave-

nously, with no reaction. On the 24th and 25th days, her afternoon peak of fever was 99.6° F., and on the 25th day she was given another dose of 3 cc., intravenously. On the 27th day, her temperature returned to normal and has been normal since. As in the first case, the site of inoculation made a steady but gradual improvement. There were five enlarged nodes from two ulcers, one on each hand, that reacted as in the first patient. The proximal node in each arm broke down about three weeks after cessation of fever and required incision; the others very gradually receded. The broken down nodes in both patients were painless and gave the impression of cold abscesses.

#### COMMENT

Two cases are, of course, insufficient to warrant the evaluation of a method of treatment, but treatment of these two cases of tularemia with intravenous mercurochrome was markedly and immediately beneficial and, in view of the facts, first, that other treatment has been unsatisfactory, and second, that treatment with mercurochrome is not suggested in the literature, these cases are reported.

# CORTICAL ABSCESS OF KIDNEY Case Report.

KEVIN D. LYNCH, A. M., M. D.

and

ROBERT F. THOMPSON, B. A., M. D. El Paso, Texas.

(Presented before El Paso County Medical Society, April 11, 1932.)

K. G. M., age 23, entered April 3, 1932. This young man was complaining of pain and tenderness in the right loin upon admission to the hospital. Five weeks previously he had sustained a severe fall while playing tennis and had received a terrific blow in this side when he struck the corner of the concrete court. For a few moments he was stunned, but he was scon all right. A few days later he noticed a "catch" in the side but gave it little attention. Then gradually slight pain and tenderness manifested themselves and these symptoms progressively grew worse until the time of admission.

During this five-week interval he lost considerable weight (25 pounds), and began to run a little afternoon temperature.

Upon examination he was seen to be acutely ill, with an anxious expression, and with definite tenderness in the right kidney area. There was no rigidity of abdominal muscles, either anteriorly or posteriorly. Examination of urine from bladder and each kidney was essentially negative. It is particularly noteworthy that the urine from the right kidney contained no pus cells. This remained true in subsequent urinalyses.

Bilateral pyelograms revealed an elongated right pelvis with deepened blunted calices. These x-ray

findings were suggestive of renal tumor or polycystic kidney. Pyelography in erect position, in contrast with those made in supine position, showed that the right kidney had lost its normal mobility and was firmly fixed, presumably by an inflammatory process. The psoas shadow was obliterated on the right side but perinephritic abscess was ruled out by the above essential points of the physical examination.

Renal function tests showed that the right kidney excreted only 10 per cent of the dye in the first hour in comparison with the 40 per cent ability of the left. Another estimate two days later duplicated these findings approximately, revealing a marked diminution in the excretory power of the right kidney.

Blcod study gave the following findings: Blood urea, 43 gm. per 100 cc. of blood; hemoglobin, 75 per cent; R. B. C., 3,600,000; W. B. C., 18,000. Differential showed polys 80 per cent.

During the week that this case was being observed and studied the temperature ranged around 101 to 103° F. each afternoon and the blood pressure remained at 100 50. The pulse was noticed to be full and regular at all times and stayed between 80 and 90.

From the temperature, leukocytosis with predominence of polymorphoneutrophiles, pain and tenderness in the right loin, and with the symptoms becoming aggravated all the while, it was realized that an infectious process was being dealt with, despite the fact that the urine from the right kidney was free from pus cells.

With the pre-operative diagnosis of cortical abscess, operation was decided upon, and on April 9, 1932, under spinal anesthesia, this was done. The kidney was exposed by a loin incision and a large abscess was seen in its mid portion. From this about a pint of thick, yellow pus was evacuated. Drains were inserted into abscess cavity and the wound was closed. The convalescence thus far has been very satisfactory.

This case is presented to show that an extensive suppurative process may be present in the substance of the kidney without pus in the urine and that such a process may result from trauma.

## ESOPHAGEAL OBSTRUCTION CASE REPORT

R. B. HOMAN, Jr., M. D. El Paso, Texas.

(Presented before El Paso County Medical Society, April 11, 1932.)

Patient: Mr. S. R. C., 37 years old. First Examination: January 9, 1932. Chief Complaint: Bronchial asthma.

Present Illness: Patient developed chronic bronchitis and a severe cuogh following measles at the age of 4. This did not clear up and did not get worse until he had pneumonia while in the army in

1918. He was admitted to the army after an examination, at which time his bronchitis was somewhat better. Following this attack of pneumonia, his bronchitis became asthmatic in type. He had numerous skin tests for allergy but these were all negative. He has a fairly constant difficulty on inspiration and is subject to more severe attacks during which inspiratory and expiratory phases are involved. There is also a severe productive cough at these times. He has taken adrenalin, ephedrine, and codeine at various times with indifferent success. His asthmatic condition has continuously grown worse, and is especially severe in a damp climate. He has always been somewhat dyspeptic, as he states it, and frequently, as a child, he remembers regurgitating his food, especially when he would stoop over. However, he had no idea that there might be anything wrong with his stomach or esophagus until his convalescence from the pneumonia in 1918, when he had a weighty feeling in his lower chest. The doctors who examined him at that time made no mention of pathology in the esophagus. Following his discharge from the army in 1918, he was sent to Fort Bayard as a tuberculous suspect. Had frequent x-rays at Fort Bayard and other army hospitals, but no mention was made of a mass or esophageal condition until 1924. He was sent to Reed Hospital and a diagnosis of thoracic neoplasm, diaphragmatic hernia, and dilatation of the esophagus, was made. The pressure pain in the lower chest continued.

At the present time his esophageal condition does not seem any more severe than it was 12 years ago. He cannot eat solid foods at times, while at others he seems to have no difficulty eating them. He is forced to sit up for a while after eating to prevent regurgitation. Frequently at night he has to arize and spit up food which he regurgitates, and he says at times there seems to be some pus mixed with this regurgitated food. Only once, at the age of 15, did he notice any blood in the vomitus. He depends on semi-solid and liquid foods for his diet. He frequently strangles on the food and throws himself into paroxysms of coughing.

Past History: Measles at the age of 4. Pneumonia at the ages of 8, 15 and 24. Denies venereal disease. Family history and marital history are irrelative.

Physical Examination: Best weight, 130; present weight, 104. Temperature at time of examination, 98.6°. General appearance: Patient is somewhat emaciated and there is moderate dyspnea at rest. Has frequent hacking cough. Asthmatic wheeze is plainly heard. Pupils are regular and react to light and accommodation. Nasal septum deviates to the left. Pharynx slightly granular. Chest is emphysematous in type. There is apparent difficulty on both inspiration and expiration. Tactile fremitus is increased at both bases, posteriorly. There is diminished resonance in the bases, posteriorly, and in the interscapular region. Breath sounds are harsh and bronchial in type. Many inspiratory and expiratory wheezes. These are heard over the entire chest. Nu-

merous coarse and medium moist rales in the bases are not affected by cough. Heart is in normal position but the right cardiac dulness is about 1.5 centimeters outside of the right sternum border. Heart sounds are clear and there are no murmurs. Blood pressure is 130/96. Pulse rate 76 per minute. Abdomen is ptotic in type. There are no palpable masses. No hernia. There is moderate clubbing of the fingers with slight cynosis of the nails. No other deformities.

Pathology: Urine normal. Sputum examination negative for tubercle bacilli; mixed infection moderate. Hemoglobin, 90. Red blood cells, 4,736,000; white blood cells, 10,000; polys., 73 per cent; lymphocytes, 18 per cent; basophiles, 1 per cent; eosinophiles, 2 per cent; transitionals, 3 per cent; large mononuclear lymphocytes, 3 per cent.

X-ray Readings: Heart is normal in size and position. The lung fields are fairly clear. There are a few calcified glands at the hiluses, and a moderate amount of peribronchial thickening throughout. Posterior to the heart and extending about 11/2 inches to the right, there is a large mass, smooth in contour, extending upward and inward and across the right border of the heart just about mid-way to the right auricle. This is dense and at first was mistaken for the right border of the heart. When barium was given, the esophagus showed definite ballooning above and even with this mass, extending down almost to the mid part of it. Then there is a definite constriction with the esophagus turning to the right and then sharply to the left, and continuing constricted to the cardiac end of the stomach. A barium meal emptied from this rather rapidly at first, and then slowly until at the end of 30 minutes a considerable amount of barium was still present in the esophagus. Stoniach picture shows the position to be very low, set well down below the upper border of the pelvis.

#### COMMENT

This case is presented as a curiosity. I should like to know the opinions of the members of the society as to the probable etiology of this mass. The patient does not complain of it, but rather of asthma, which possibly could be somewhat relieved by an autogenous vaccine.

We know that esophageal obstruction is usually due either to cancer or to stricture resulting from the action of a corrosive substance. While this tumor is in the usual location of cancer, such tumor is usually fatal within a year after symptoms are noticed. There are no metastases evident. There is no history of corrosive poisoning. Other extrinsic tumors such as lipoma, fibroma, myoma, and so forth, have been reported as rarely seen. In this case, however, we have an esophagus which apparently courses through the tumor mass. This would rule out an extrinsic tumor, in my opinion. Tuberculosis of the esophagus is rare and usually takes the form of ul-

ceration. Syphilis is also rare and this man has no history of infection and numerous negative Wassermann reports. Congenital stenosis is occasionally reported, but the child usually is afflicted with some other deformity and rarely reaches adult life. Chronic mediastinitis is a possibility.

We have then a case of partial esophageal obstruction with moderate dilatation of that portion of the esophagus above a mass of unknown origin.

#### TREATMENT OF ACUTE SPON-TANEOUS PNEUMOTHORAX

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(Read before the Forty-First Annual Meeting of the Arizona State Medical Association, held at Globe, Ariz., April 21-23, 1932.)

The etiology of spontaneous pneumothorax is inseparably bound up with its therapy. Lord, of Boston, found that only four per cent of over a hundred cases gave a history of severe cough as a possible etiological factor. However, the consensus of opinion of a number of different authorities places trauma high in the scale of mechanical factors. From the standpoint of pleural changes predisposing to spontaneous pneumothorax, undoubtedly emphysema ranks high, with the formation of small subpleural blebs. Of relatively less frequent importance is tubercle formation on inflammatory subpleural changes. Spontaneous pneumothorax is not generally recognized until either severe pain is present or marked dyspnea develops. It starts usually with severe pleuritic pain and dyspnea out of proportion to the extent of the collapse. This is because of the pleural shock reaction to sudden separation of the two layers of the pleura. The pain becomes less severe in a few moments unless adhesions are present to cause pain by stretching of the pleural bands, but dyspnea increases over a period of a few moments to several days, depending on the size of the opening and its nature. Most cases pass through the stages of initial rupture, followed by valve action with air passing into the pneumothorax pocket with each inspiration, the hole closing during expiration. As the intrapleural pressure increases and the surface area of the visceral pleura diminishes, the hole retracts and becomes smaller until it finally closes. In case valve action does not continue but a sufficiently large opening is produced, the pressure with each inspiration and expiration averages the same as atmospheric pressure. In this type of case, bronchial fistula is most apt to persist, with the attending complications. With this explanation of the production of pneumothorax in mind, it can be seen that the most critical time in the treatment of the whole course of this condition is at the onset.

That spontaneous pneumothorax represents a very important emergency in tuberculosis is shown by the fact that about ten per cent of the cases of fatal tuberculosis show evidence of either recent or old spontaneous pneumothorax of greater or less extent1. Many of these cases recover from the immediate effects of the spontaneous but die either from complications such as empyema, or from the indirect effect of reduction in lung volume, and extension of active disease. Others form small localized pneumothorax pockets which tend to obliterate themselves, while others actually derive considerable benefit from the collapse. This paper deals chiefly with the treatment of the initial stages of spontaneous pneumothorax. This is the time that the whole train of events which follows can be most influenced by proper handling of the case, and serious complications can best be prevented. Neglect at this period is apt to mean pyothorax, bronchial fistula, complications which may require major surgery.

As soon as the formation of pneumothorax is recognized, the treatment indicated by the urgency of the case should be instituted. Sedatives and stimulants, as required, should be given in large amounts at rather frequent intervals, provided that the amount of expectoration is not too great, in which case bronchial obstruction may occur from too active depression of the cough reflex, and pneumonia or atelectasis of the opposite lung supervene. In the presence of large amounts of sputum, use small doses of morphine with chloral, bromides, or sodium amytal. Cardiac stimulants are of doubtful value.

Use of oxygen for the relief of dyspnea and cyanosis is of immense importance and is often neglected. The new type of chamber, in which the temperature and humidity can be regulated as well as the oxygen content, should be used if possible. The intranasal catheter method will be found effective in reducing the respiratory rate ten to twenty per cent. In no type of illness will oxygen be found more useful than in these cases. The depth of respiration is very materially influenced by oxygen administration and is the chief consideration in that stage of a spontaneous collapse when valve action of the opening in the lung is increasing the intrapleural pressure beyond tolerance. The sudden deep gasp of an exceedingly dyspneic patient accentuates this valve action and much is to be gained by producing more shallow inspiration. Continuous administration of oxygen for several days, if need be, may be effective in carrying a patient through the acute stages and may be the deciding factor between recovery and a fatal termination.

Intrapleural pressure should be determined by the manometer. Decision as to whether air should be withdrawn, the pressure left the same, or air injected, depends on several factors. If the patient is near asphyxiation, air must be withdrawn, regardless of the pressure. If there is a negative pressure and the patient is not especially dyspneic, air should be injected either to the point of inducing beginning dyspnea, or neutral, or slightly positive pressure. If valve action in the pleural opening is still in operation, removal of air will hardly benefit and will probably be harmful by causing infected material to be drawn from the lung into the pneumothorax. If valve action is suspected in the presence of a negative pressure, the earlier air is injected to the point of tolerance or a positive pressure, the better.

Morelli<sup>2</sup> was the first to point out the mechanical advantages of positive pressure in spontaneous following chest injuries, his opinion being based on a large series of cases. As long ago as 1911 he recommended maintaining a plus 6 to 12 or even 20 centimeters of water pressure. This is hardly feasible in the average case of tuberculosis, but the object, namely, the prevention of pyothorax with a bronchial fistula, can frequently be accomplished if the mechanics of the lung are kept in mind and daily use of the needle practised. Air is rapidly absorbed by fresh pleura and a positive pressure one day is almost certain to become a negative pressure the next day. Frequent readings and appropriate injections of small amounts of air are to be resorted to.

To illustrate two types of acute spontaneous which present different problems of management, let me cite specific cases. The first patient was a man of twenty-five years, suffering from incipient tuberculosis with a minimal parenchymal involvement. He had never taken a bed-rest cure and, at the time of the occurrence of his spontaneous, was doing light work-interior decorating. Immediately following a elight fall from a low scaffolding, he had a sharp pain in the left chest associated with only a little dyspnea. He went about his work almost as usual but the pain was persistent and he complained of a sensation of fullness in the upper abdomen, as of pressure from below upon the left chest. It was found that the left lung was entirely free from the chest wall, showing about one-third collapse. In this patient the lung pathology was not such as to warrant

continuing pneumothorax for the treatment of the lung. Many times, re-expansion in this type of case will take place without mishap. In view of the fact, however, that recurrence of the spontaneous during re-expansion of the lung is rather a frequent occurrence, it is wisdom to carry pneumothorax for a few weeks, using small amounts of air frequently and keeping the pressure at an even level in order to allow time for a firm healing of the pleural opening. Thickening of the pleura will take place in a relatively short time.

A second case may serve to emphasize this point; a man of forty-four, with a moderate degree of old fibroid infiltration into both upper lobes, developed an acute attack of pain in the right chest, with extremely rapid pulse, marked dyspnea and cyanosis. Immediate thoracentesis of air was necessary to prevent asphyxia. After thirty-six hours under heavy doses of sedatives and several aspirations of air which was under high positive pressure, valve action through the pleural opening ceased. The patient continued to improve for a week. He then had a sudden recurrence of great severity, and, in spite of almost continuous removal of air, again registering high positive pressure, his dyspnea could not be relieved, and he died in seven hours. If this patient had been kept under pneumothorax for several weeks, there is every reason to believe that his lung would have been re-expanded without mishap.

Of prime importance is the underlying lung pathology. If a patient might benefit by artificial pneumothorax and he suffers a spontaneous collapse, he can often be continued as a therapeutic pneumothorax with good results. A case of this type is that of a man thirty-eight years of age, who had extensive tuberculosis of the fibro-caseous type, involving both upper lungs. A chronic case of nine years duration, he was in a practically stationary condition with one ounce of sputum daily, very little fever, fair weight and moderate dyspnea on slight exertion. He developed a pain in the right shoulder without much shortness of breath and it was found on fluoroscopic examination that he had a spontaneous covering only the upper part of the lung, the base being firmly adherent. The manometer showed the pressure to be negative. In spite of considerable trouble in the contralateral lung, continuation of this ideal selective collapse gave splendid results, with improvment of the patient's condition during the next ten months. At this time a spontaneous occurred on the opposite side, this time with fatal outcome.

Phrenectomy is a procedure which I venture to predict will be found to diminish the ill effects of

spontaneous in selected cases. The dramatic results of phrenectomy, observed in cases with old bronchial fistula, prompts this suggestion. . In two patients the history showed bronchial fistula to have been present for more than six months, yet phrenectomy immediately stopped the expectoration of intrapleural pus and subsequent treatment showed these fistulae to have remained closed. If a case has been under observation and a thorough study has been made before the collapse occurs, it may be relatively easy to decide that phrenectomy is indicated and possible. Equalization of intrapleural pressure follows paralysis of the diaphragm. The changes in pressure with respiratory movements are much diminished. Elevation of the diaphragm relaxes the tension upon the visceral pleura. Valve action may be checked and the pleural opening allowed to retract. The crucial consideration is whether respiratory function can be borne without that diaphragm. The indications limit the procedure to a very small group of cases.

Theoretically, the use of the thoracoscope and direct application of Bethune clips appeals, but the technical difficulties of locating the pleural opening and placing the clips, with the patient in desperate condition, preclude the use of this method.

In conclusion, I wish to emphasize the following points in the treatment of acute spontaneous pneumothorax: In addition to the effective use of sedatives, in no illness is the continuous administration of oxygen more valuable; instead of removing air, instillation should be performed early in the course of treatment, if possible, and, in the event aspiration must be performed, it should be the aim not to remove more than necessary to relieve acute dyspnea. Intrapleural pressure should be tested at frequent intervals and kept at as near positive as feasible for several days after the acute condition is under control. A lung which has undergone acute spontaneous collapse should not be allowed to re-expand too rapidly under high negative pressure. With the underlying lung pathology in mind, phrenic exeresis or some other operative procedure should be considered.

#### REFERENCES

Wilson J. A.: Am. Rev. of Tub. 14, 51, pp. 577, 1926.

Mcrelli, E.: Gazetta Medica Italinia. 1911, Vol. 29. Treatment of Spontaneous Pncumothorax.

Medical Clinic of the University of Venice, 1920, Translated by Lincoln B. Davis. W. M. Leonard, Publisher. Goston. The Treatment of Wounds of the Lung and Pleura.

Bloch, Paul: Proc. sit.

#### DISCUSSION

DR. VICTOR RANDOLPH (Phoenix): I am

second case cited. I do believe that the removal of too much air is a very dangerous thing. In one patient in whom a spontaneous pneumothorax occurred in the course of bilateral artificial pneumothorax, the pneumothorax needle was kept in place and small amounts of air, sufficient only to relieve dyspnea, were removed at intervals over a period of 48 hours, at which time the lung perforation evidently closed.

I think this paper has brought out some very excellent points and I have enjoyed it.

DR. W. P. HOLBROOK (Tucson): Is spontaneous pneumothorax presumptive evidence of tuberculous etiology, or can one dismiss the patient and let him go back to work?

DR. HOWELL RANDOLPH (closing): The first case cited in my paper is possibly an example of "idiopathic" spontaneous pneumothorax. Undoubtedly, cases of spontaneous pneumothorax occur and are never recognized. The majority of them are caused by subpleural emphysema with rupture of a pleural bleb. The fact that they occur more frequently in tuberculous patients simply means that tuberculosis predisposes to emphysema.

Decision as to whether pneumothorax should be continued in any given case depends upon the underlying lung pathology which must be determined. The safest criterion is to allow the lung to re-expand gradually. and, before complete re-expansion has taken place, to take an x-ray picture. Every case of spontaneous pneumothorax should be given a few refills to allow the pleura a chance to thicken.

#### INTRAVENOUS UROGRAPHY

By CHAS. N. PLOUSSARD, B.S., M.D., F.A.C.S. Phoenix, Arizona

Because of the difficulties sometimes encountered in cystoscopic and retrograde pyelography, search for a method suitable for rendering the urinary tract opaque by the intravenous route has been going on since 1918, when Cameron discovered that the iodine molecule was opaque to the x-ray. In 1923, Rountree, Osbronc, Sutherland, and Schol used sodium iodide for the purpose of outlining the urinary tract. No satisfactory pyclograms were obtained, so the attempts were abandoned for a time. When Cole and Graham developed the work of cholecystography, intravenous urography seemed more probable than ever before. Progress was slow, and no satisfactory procedure was developed until 1929, when Swick of New York, working with Lickwitz at the Altnover Hospital and Von Lichtenberg at St. Hedwig Hospital in Berlin, developed a solution which could be injected intravenously.

The first substance that outlined the urinary tract was called uroselectan. This contains 42 per cent

iodine, which had a very low toxicity. This substance was relatively unstable, and had to be prepared shortly before use by dissolving forty grams in 100 cc. of distilled water. This had to be injected very slowly—at the rate of ten to fifteen cc. per minute. If injected too rapidly, the patient will complain of pain in the arm along the course of the vein used for injection, some headache, feeling of warmth in the body, and occasionally some nausea. This substance was excreted by the kidneys at such a rate that at thirty to forty-five minutes after injection the concentration was greatest in the urinary tract, and the best outline of the tract was obtained. At the present date we have a solution called skiodan, which is put up in 50 cc. stable solution. This solution contanis 52 per cent iodine. Fifty cubic centimeters is the adult dose. It is even less toxic than the original uroselectan, since it is possible to inject a smaller amount at a more rapid rate, therefore requiring less than five minutes for the entire injection. There is no pain, very slight feeling of warmth, and no untoward symptoms. It is eliminated by the urinary tract sooner, in greater concentration, so that the best outline of the urinary tract is obtained ten to fifteen minutes after injection. Another substance in use now is iopax and neo-iopax. This is an improved uroselectan substance.

There are a few things to be mentioned in preparing for intravenous urography that will probably aid in obtaining a clear film, and afford more protection to the patient. The patient should have a cathartic twenty-four hours before injection. Soft diet should be taken the evening before, and fluids limited during the night. Patient should go to x-rav in the morning without breakfast, and plain film should be taken. Two glasses of water should be given just before injection is begun. In cases where severe renal disfunction is suspected, a blood urea nitrogen estimate and phenolsulphonephthalein kidney function test should be obtained.

Skiodan is the preparation with which I am most familiar. Our technic is simple, a 50 cc. syringe and 22-gauge needle being used. I use a smaller needle, as I believe it is a factor of safety in preventing "speed shock." The patient urinates before the injection. He is placed in the Bucky table and a flat plate made in the recumbent position. The injection is then begun, excretion of the iodine watched under the fluroscope, and film is taken five minutes after injection is finished. Another film is taken fifteen minutes after injection, another at thirty minutes, and a later film is necessary to determine stasis or reten-

tion in the urinary treat. Some authorities state that it is necessary for the patient to empty his bladder before each film, because the solution in the bladder which gives an excellent cystogram may overlap the vesical portion of the ureter and thus hide possible pathology in this area. Others say that, when the bladder is allowed to fill, better ureterogram and pyelogram are obtained, because of more or less back pressure being present. I find the latter to be true; a moderate Trendelenburg position also favors obtaining more detailed films. We take the films in different positions to determine mobility of kidneys. kinks, and so forth, in the ureter, and, unless the areter is quite dilated to its vesical portion, we do not allow the patient to empty his bladder. One hour after injection approximately 50 per cent of the injection solution can be recovered in the urine; three hours after, 75 to 80 per cent; nine hours after, 90 per cent; and in twenty-four hours, 95 per cent. This shows how little of the solution leaves the body through channels other than the urinary tract.

Intravenous urography is indispensable, for we can thus often arrive at a diagnosis in the urinary tract when it is impossible to investigate the tract any other way. We may be disappointed with the unsatisfactory results of the intravenous method, but such was the case while Graham and Cole were experimenting with the dye for cholecystography. I feel that many of these difficulties and disappointments will be overcome as our solutions and technic are further perfected. With our present knowledge we can not consider an excretion plelogram as equal to a picture made by the catheter method.

The majority of urological diseases are caused by infection, obstruction, or both. Skiodan will be of great value to us in many cases of obstructive uropathy, but will not help us much as far as the infections of the urinary tract are concerned, unless there should be an associated dilatation with stasis. This shows how necessary it is at times, in cases of both obstruction and infection that both intravenous, pyelography and cystoscopy be employed. Intravenous urography will always have limited use because the cystoscope will so often be necessary before an exact diagnosis can be made. Probably the greatest weakness of the present method is its failure to outline minor deformities, as in early tuberculosis of the urinary tract, early malignancies, and early hydronephrosis, with slight blunting of the calices. Neither will excretory urography show us a "dead" kidnev.

It has been shown that any of the solutions in-

jected intravenously for pyelography have antiseptic properties. Bacteria will not grow, and urine will not decompose for days when it contains the solution injection.

It will be necessary to separate the indications, contraindications, advantages, and disadvantages of intravenous urography in order to complete the treatise. A few of the disadvantages have already been mentioned. A few indications will be enumerated and discussed.

- (a) In cases of small contracted bladders, these bladders will not tolerate a cystoscope and will not tolerate distending fluid necessary for cystoscopic examination.
- (b) In children, when referring physician does not approve of cystoscopy, and parents will not consent to it, or when it is impossible to do so.
- (c) In the nervous patient who will not consent to be cystoscoped. Often the diagnosis can be made and treatment instituted on findings secured entirely by the intravenous method.
- (d) In most cases of tuberculosis, when patient can not stand the ordeal of cystoscopic examination. and in some of these cases cystoscopy can undoubtedly be termed an ordeal. The lesions can usually be located in the upper urinary tract.
- (e) In severe cystitis, with edema and swelling present, making identification of the uretel orifices impossible.
- (f) In some cases of massive bladder tumors and bladder hemorrhage where cystoscopy merely increases hemorrhage.
- (g) In ureteral stricture where catheter can not be passed to kidney.
- (h) Where cystoscopy is impossible, due to ureteral stricture or prostatic hypertrophy or malignancy.
- (i) In cases of active infection in the urinary tract, with fear of spreading infection.
- (j) In very senile patients who can not stand cystoscopy.
  - (k) In cases of rectal implantations of ureters.
  - (1) In cases of malformation of ureters.
- (m) In cases of rupture of the bladder or rupture of the kidney in which pyelograms are desired.

There are very few contra-indications to the intravenous method. Age is not a contra-indication. It should not be attempted in cases of anuria, uremia, severe damage to renal cortex, thryotoxicosis, or pregnancy with any evidence of renal failure.

Probably its greatest value comes in cases of obstruction with stasis; for example, hydronephrosis

with retention. Usually very clear films are obtained in these cases.

In prostatic hypertrophy, skiodan usually shows a definite bilateral ureterectasis and pyelectasis. This condition is present in a greater number of cases of prostatic hypertrophy than was formerly thought.

Ureteral obstructions are more easily located by the intravenous method. In cases of ureteral calculus we not only get good films with skiodan, but it informs the surgeon of those cases which are in need or immediate surgical attention because of complete blockage of the ureter; and it will distinguish these from the cases where only partial obstruction exists, and time might be well spent in cystoscopic endeavors to help descent of stone. Attempt to locate stone in cases of severe infection complicating the obstruction, by the retrograde method, often leads to febrile reaction which may be quite severe.

The excretion method is of incomparable value in diagnosis of renal tuberculosis. In cystoscopic maneuvers there is always danger of carrying the tubercle bacilli into tissue depths not already infected, but it is necessary to cystoscope a large majority of these patients in order to determine whether the disease is unilateral or bilateral. Cystoscopy in these patients is often very difficult. Most of them have intolerable bladders, and very often the ureteral oritices can not be identified. Very often these patients are too sick to stand cystoscopy.

Renal anomalies will be found more often in cases in which intravenous urography is employed. Unless bilateral pyelograms are taken, fused or ectopic kidneys, duplication of kidney pelvis, and so forth, are frequently overlooked.

It is an accepted fact at present that it is necessary to secure bilateral pyelograms in all cases where renal conditions are suspected. In these cases intravenous urography comes forward. It is far from the ideal procedure to do a bilateral pyelogram by the retrograde method at one examination. It is dangerous, in that complete anuria has been reported following bilateral retrograde pyelography.

If one kidney gives a good pyelogram and the other gives no shadow at all, it is either completely obstructed, dead, or absent. In this case cystoscopic examination and retrograde films will clear up the diagnosis.

The physiology of the kidney pelvis and ureter with relation to "systole," and "diastole" and peristalsis has been observed and studied by the intravenous method. Excessive peristalsis may simulate kink or stricture in the ureter. In other words, by

excretion urography we are able to obtain a physiological pyelogram.

A retrograde pyelogram is often far from a physiological picture. The catheter in the ureter and the injection of a hypertonic irritating solution into the upper urinary tract, causing pain and spasm and forcing solution into the kidney pelvis to a point of forceful dilatation, play a part in causing the picture to be far from a physiological urogram.

We are attempting to approach this as nearly as possible in our retrograde pyelograms. We do not wait until the patient says he feels pain in his back to tell us the kidney pelvis is filled, but watch the pelvis fill with sodium iodide under the fluoroscope, and when it is completely outlined we stop the injection. We have never yet had a patient complain of a pain in the back at the time of injection with this method.

The urinary tract is all too frequently forgotten in both the acute and ordinary abdominal cases. Bilateral pyelography is valuable in obscure abdominal and pelvic conditions. A pyelogram with very little discomfort to patient and without any instrumentation may clear up a difficult problem in diagnosis.

The question repeatedly comes up as to the value of excretion urography in determination of kidney function. I believe it has a place in this respect, but our present observations and experiments are insufficient to enable us to arrive at a definite conclusion.

Intravenous pyelography will bring the urologist and roentgenologist into closer contact in spirit of cooperation, and not a spirit of competition.

Intravenous urography is considered safe. Here I will quote a case report given by J. A. Riebel and F. A. Riebel and published in Radiology, March, 1931.

Inasmuch as the literature to date indicates that intravenous pyelography is a harmless procedure, we feel it timely to present a case in which we feel that its use contributed to the death of a patient.

A. C., a white male, aged 53, was first seen by us on November 15, 1930. He gave a history of diabetes, and for two months had had a series of furuncles. Apparently both the diabetes and the furuncles had received indifferent treatment. For the past two weeks he had been running a fever and had lost twenty pounds in weight.

Examination on the following day disclosed an obese white male, apparently quite ill. Temperature, 104°; pulse 130; respiration 28. There was a large furuncle over the seventh left rib, and another over the right kidney. Palpation gave a sense of

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#### PRESIDENT'S ADDRESS

President Clarence Gunter's address which was published in the June issue of this journal called attention to a number of points which the profession of this state should hold constantly in mind.

The first is relative to Arizona's being the natural play ground of the United States and an all round resort for pleasure and health. By advertising our advantages to the people of the United States we shall be assured of prosperity which can not be taken from us. The medical men should see to it that the respective chambers of commerce are fully aware of the profits to be made by advertising our state as a play ground and health resort. Any benefits which accrue to one part of the state must be reflected upon every other. The Phoenix newspapers carried the statement that 20,000 persons from the Salt River Valley motored to the northern part of the state during the 4th of July holidays. This did not mean that many of them did not go to the southern or eastern parts of the state. There might well be a state chamber of commerce for the purpose of advertising the entire state as a unit.

The president next called attention to the effort being made by certain insurance companies to lower the fee schedule of the Industrial Commission. He points out that if the men would be conscientious in their reports and in their attention to patients, making no unnecessary calls or charges, that the Industrial Commission very likely will make no alteration of the schedule. It is difficult to believe that any member of our profession would make the Industrial Commission an unjust charge. If such there are examples should be made of them. Such practices must be stopped!

The next point which he discussed is that of put-

ting occupational diseases in the same class as Industrial accidents, allowing them to be taken care of by the Industrial Commission. This would seem to be just.

He recommends that the question of contract practice be brought to the consideration of the council of the Arizona Medical Association to be thoroughly discussed that a proper stand may be taken upon it.

He next calls attention to the cults and irregular practitioners which are flocking into this state in large numbers and suggests as a remedy that we again attempt to pass the Basic Science act. He emphasizes the importance of the physician's taking an active part in politics and making sure that every man running for the legislature will endorse this act and such other acts for the good of the public that are put forth by the medical profession.

His last subject to be thoroughly discussed was that of medical ethics. While our ethics are misunderstood by the public at large there is no question but what our code does much for the public as well as for ourselves.

## PUBLIC HEALTH NOTES

By J. ROSSLYN EARP, Dr. P. H. Director New Mexico State Bureau of Public Health.

NATIONAL TUBERCULOSIS ASSOCIATION

Many physicians from the Southwest and from Colorado were present this year at the meeting of the National Tuberculosis Association which was held at Colorado Springs from June 6 to 9. At a luncheon held on June 8th and attended by repre-

JULY, 1932

sentatives from the Rocky Mountain states it was decided to form a regional Tuberculosis Association without any dues or binding rules. Dr. Chas. O. Giese of Colorado Springs was elected president, Dr. L. S. Peters of Albuquerque, vice president, and Dr. Arnold Minnig of Denver, secretary. These officers are to consult with people actively interested in tuberculosis and to decide upon the date and place of the first meeting.

An excellent symposium was presented in the sociological section on tuberculosis amongst Indians, negroes and the Spanish Americans. Dr. Robert O. Brown of Santa Fe represented this section of the country with a paper which followed the social life of the New Mexican natives from the time of the Conquistadores down to the present.

A most refreshing paper was that of Dr. Mazyck P. Ravenel, editor of the American Journal of Public Health, who made a special effort to relieve the association of any false pride that they may have assumed. Younger members got quite an historical thrill from reenacting with Dr. Ravenel his single handed fight in this county at the beginning of the present century against the famous Koch heresy that human beings cannot contract an infection with the bovine bacillus.

## WESTERN BRANCH AMERICAN PUBLIC HEALTH ASSOCIATION

Close upon the heels of the meeting in Colorado Springs came a convention in Denver of the Western Branch of the American Public Health Association. State health officers from Washington, Oregon, California, Montana, Idaho, Utah, Colorado and New Mexico were present. Doctor Sult of Arizona was officially represented by Mrs. Leeper. An excellent program included two addresses by Dr. Louis I. Dublin, from weekly reports on the health of twenty-six million policy holders of the Metropolitan Life Insurance Company, could report that up to the present, in spite of economic conditions. there is "not a trace" of disturbance in the health of the people. On the other hand he strenuously maintained that to cut budgets for health departments at the present time is "like disbanding an army in time of war."

In the secretary's report New Mexico won its share of praise by having contributed the largest number of new members in the last twelve months. Dr. C. H. Douthirt of Union County and Dr. Walter E. Kaser of San Miguel County were among the delegates present.

Many excellent papers were read and the discussion was lively and a source of constant anxiety to time-

keeping chairmen. These papers will be published, some in the American Journal of Public Health, others in western journals such as Western Hospital Review. Dr. A. L. Beaghler of Denver was elected president and Dr. J. L Pomeroy of Los Angeles, president elect. It was decided that the 1933 meeting shall be held "somewhere in southern California."

#### INTRAVENOUS UROGRAPHY

(Continued from page 301)

resistance over the latter area, although a mass could not be definitely outlined.

X-ray examination of the chest was negative. Roentgenograms of the kidneys revealed moderate uniform enlargement of the left kidney; the right one was not visualized. However, while the lateral margin of the left psoas muscle was well defined, that on the right was very faintly visualized and appeared compressed medially. The lumbar spine was flexed to the left; diagnosis of probable perinephricic abscess was made.

Cystoscopy was performed, but, because of intense inflammation, the ureters could not be located. As we had administered uroselectan in three cases previously in our series without untoward efrects, and as the diagnosis was still in some doubt, this procedure was thought to be indicated. Therefore, we injected two-thirds of the normal dose of urcselectan at 2 p. m. Forty-five minutes later the patient had a severe chill, and the temperature rose to 105°; pulse 160 and weak. At the same time he became wholly incoherent. At 3 p. m. a roentgenogram disclosed the presence of a little of the opaque drug in the bladder, but its concentration was insufficient to produce a pyelogram. A blood count showed red cells, 4,510,000; white blood cells, 18,-475; hemoglobin, 75 per cent. No urine was secured because of the incontinence. The patient lapsed into unconsciousness at 5 p. m. As it was feared that he would not react, he was operated upon at 7 p. m. An incision in the lumbar region over the right kidney disclosed an abscess containing two liters of thick pus, superficial to the muscles. An incision released another liter from the region of the left midaxillary line. At 11 p. m. the temperature reached 107.8°, with no pulse. At 2 a. m. the patient died.

No doubt this patient was very septic before the uroselectan injection, as shown by the fact that three liters of pus was obtained from two incisions. He was in a critical condition at the time the two large abscesses were incised. The operation was five hours after the uroselectan administration, and death of the patient twelve hours after the injection. I am of the opinion that uroselectan played very little part in this patient's death.

Some few urologists have voiced themselves as definitely antagonistic to intravenous pyelography. Perhaps they are of the opinion that this procedure

will take urography out of the hands of the urologist, and place it in the hands of the general practitioner, but such is not the case. On the other hand it will bring many cases to the urologist to clear up questionable urological conditions that would otherwise go totally undiagnosed.

Again I will state that a pyelogram by the intravenous method can not be compared with one by the catheter method, all other things being equal.

It is not so much the question which is the better method, as it is to make the proper selection of cases in which to use either method or both.

Retrograde pyelography is not to be supplanted by, but supplemented with, excretion urography. Each has its advantages and disadvantages.

There is much danger of becoming overenthusiastic about this procedure, thus retarding its development because of unsatisfactory results in unselected cases. It is not a short cut to diagnosis, nor an all around diagnostic procedure. It is only one of the "modi operandi" of urological diagnosis.

Excretion urography is here to stay. It is an advance in special and routine urologic studies.

#### GRANT COUNTY (N.M.) MEDI-CAL SOCIETY

Under the guidance of the President, Dr. William Washburn, and with the able assistance of Dr. David Kramer of the Program Committee, the Grant County Medical Society has recently enjoyed a series of three unusually interesting and successful meetings. These meetings have been made possible by the friendly cooperation and interest of a number of El Paso physicians and the Society is greatly indebted to these men for their assistance and kindness.

On March 25th, Dr. L. O. Dutton of El Paso presented a paper on "The Present Status of Allergic Diseases," discussing the mechanism of protein sensitivity, symptoms and treatment. Dr. Dutton stated that he felt that a certain degree of disrepute into which, in some quarters, protein disensitization had fallen was due to two factors, the overenthusiasm of some of its proponents and carelessness in administration and technique on the part of others. Dr. Byrne of Fort Bayard presented a clinical report on "Spleno-Myelogenous Leukemia," the patient being present for demonstration and exhibiting a markedly enlarged spleen extending into the pelvis. In the discussion which followed, Dr. Cathcart of El Paso stressed the remarkable remissions obtainable by judicious x-ray treatment.

On April 29th, a dinner meeting was held at the Silver Inn, Silver City. After an enjoyable repast the first of the guest speakers, Dr. S. A. Schuster of El Paso, spoke on "The Larynx in the Tuberculous," taking up the differential diagnsois, compli-

cations, and treatment of the condition and illustrating his points with the histories of actual cases from his experience. Dr. N. H. Keller of El Paso followed with a paper on "The Pathologic Physiology of Nephritis," presenting a simplified clinical classification and thoroughly evaluating the various factors in diagnosis, including laboratory tests. Dr. Arthur E. Gill of Fort Bayard presented a paper on "Ocular Tuberculosis," Dr. Gill reviewed the experimental work in this field and illustrated his talk with original water-color representations of the eyeground in this condition.

On May 25th, the Society had as guest speakers Drs. J. M. Laws and C. F. Rennick of El Paso. Dr. Laws presented a most instructive paper on "Clinical Reports of Difficult Chest Cases," the paper being illustrated with lantern slides and x-ray films. Dr. Laws discussed a number of the puzzling border-line chest cases, in which the decision of what to do depends so heavily on the personal judgment and experience of the physician, there being little guidance in the text-books. Dr. Rennick talked on "Infant Feeding in the First Trimester," stressing the great importance of even a small proportion of breast milk in the cases where artificial feeding must supplement the natural method and taking up the routine of breast feeding in detail with description of cases in point.

The Society has been fortunate in having the valuable cooperation of Dr. W. E. Park, the Commanding Officer at the Veterans' Bureau Hospital at Fort Bayard, N. M. Dr. Park has given much impetus to the successful functioning of the Society. The meeting place, The Officers' Club at Fort Bayard, is well equipped for the presentation of material, an excellent lantern and reflectoscope, stereoscope, and examining tables being at the disposal of members: further, the Veterans' Hospital affords a wealth of clinical material and the facilities of a well equipped laboratory for the study of these cases. It is hoped that the coming meetings of next fall and winter will set the same high mark as those recently held.

## GOOD SAMARITAN HOSPITAL (Phoenix, Ariz.)

STAFF MEETING, MARCH, 1932

## REPORT OF DEATHS FOR JANUARY AND FEBRUARY, 1932.

There were twenty-two deaths in the hospital during the months of January and February, but only three autopsies. This makes the low percentage of 13.6 for autopsies. I believe that, if the relatives were properly approached on the matter, it should be possible to obtain autopsies in over 50 per cent of the deaths.

I have attempted to group the cases roughly as to diseases. There were five cases of pneumonia; four of these were in the hospital one day. This in it-

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self either reflects the general financial depression or suggests that the hospital, instead of being used as a valuable workshop in which to treat disease, is sometimes regarded as a last desperate resort for the moribund patient. There were four cases of pulmonary tuberculesis; two of these died shortly after a thoracoplasty. There was one case of tuberculous meningitis, one death following an operation for gangrenous appendix, and one of acute hemorrhagic nephritis. This brings the total of acute infections to fourteen. Of the remainder, there were four deaths from accidents, two from chronic myocarditis, one from carcinoma, and one from a possble mediastinal or lung tumor. The shortest stay in the hospital was a few hours, the longest for the carcinoma of the breast, 10 months. There were twelve cases who were in the hospital two days or less, before death.

The records on the whole are not sati factory. The histories are too brief and the physical examinations incomplete. In reaching the proper diagnosis in a given disease, it is essential to have a clear picture of all the possible circumstances involved, otherwise obviously there will be many mistakes made and many conditions of prime importance will be overlooked. The practising physician may say that it is possible to obtain a complete history and yet only record the essentials. Unfortunately, this is not always possible, because details which are at the time made light of, may later be of prime

importance. It is not necessary for a history or physical examination to be written at great length, but it should be systematic and complete.

The importance of an adequate history is illustrated by case 13306. This patient, a woman aged 38, was admitted to the hospital twice, the first time, December 18, 1931. She was discharged four lays later. She gave the history of having been scratched in the right arm a few days previously, while working in the laboratory. Very shortly, swelling and redness of the right arm set in. This is as far as the history goes. In the physical examnation, a brief description is made of the swelling. The nurse's notes mention local applications with improvement of the condition. There is no refer-€nce made at any time of any operation, or even indications for an operation, yet, on the front page it states that there was incision and drainage of the arm. The patient was discharged apparently recovered. She was readmitted on the 25th of January, over a month later. The history on this admissoin states briefly that she did not feel well a few days before admission and that three days previously she had had a chill and began running fever. She soon began having pain and swelling of the right knee and pain in the left che t. No mention is made of the discharging sinus of the right arm. The physical examination, on the other hand, 's somewhat better than the average. It states, among other things, that there is dullness to per-



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cussion at the left base, rigidity and tenderness of the abdomen, some tenderness but no swelling of the right knee, and a discharging sinus above the right elbow. In other words, no apparent importance was attached to the original infection of the arm as a possible source for the blood stream infection. No mention is made as to whether or not this sinus had been draining ever since the original operation, though I assume that it had. X-rays were taken, but not of the arm. Is it not likely that an osteomyelitis of the humerus initiated the septicemia, and that operative measures to eliminate this source of infection might have been life saving? Would not a careful history, complete physical examination, and adequate follow-up notes be more likely to place the sequence of events and to focus attention in the proper place? In the follow-up notes, very little is said of the condition of the left lung, and yet autopsy revealed an empyema Nothing was done to treat this condition. Even in the autopsy report, only brief mention is made of the wound above the right elbow. Surely this should have been investigated more thoroughly.

Another excellent example of the importance of good records is case 13374. This patient, a man of 72, was admitted to the hospital on two occasions, the first time in February, 1926. He remained in the hospital 25 days. The history is very brief and inadequate. It states that he had frequency of urination for three years, with pain upon voiding, and that for two days previous to admission, he had been unable to void. The physical examination states that everything is negative except for an enlarged prostate. In spite of this, there is mention made in the nurse's notes of great difficulty in breathing on several occasions. During his stay in the hospital, he received frequent bladder irrigations. He was again admitted on the first of February, 1932, six years after the previous admission, and died 25 days later. The second history states that the patient had been short of breath for the first time during his previous admission, and then follow two paragraphs of what the nurse's notes had to say on the subject at that time. This history is brief and incomplete, it leaves the impression that the physician who was caring for the patient ix years previously had not been thorough. Yet, on this last admission, though there is a fairly good physical examination, with obvious findings of chronic cardiac disease, no rectal was recorded and no mention is made of the urinary history. The follow-up notes also neglect the matter. This oversight is important, because it is possible that an enlarged prostate with urinary obstruction might have been partly responsible for the circulatory defects, through renal damage incurred by pressure. Moreover, no studies were made of renal function, the urine was examined only once, and the fluid intake and output was not measured. Is it not possible that, if there had been urinary obstruction, the institution of adequate drainage might have rolonged the patient's life? At any rate, the deects of these histories leave much to idle specula-



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tion. It is interesting that, in this case, no attempt was made to give this patient adequate digitalis therapy. On the first day of his admission, he was given five doses of the tincture of strophanthus (6 minims) and two doses of the same amount on each day for two succeeding days, then the medication was dropped and digitalis by hypo was again resumed, only a week before death. Digitalis will not always benefit a patient with a decompensated heart, but it never will unless given in adequate doses. Nor is it possible to foresee what effects it will have in a given case until it is properly tried. Strophanthus, or tincture of strophanthus, should not be used in the place of digitalis, because its absorption is very irregu'ar. On the other hand, strophanthin is still used intravenously because of its rapid action. This record illustrates the impertance of thoroughness in the obtaining of a history and the performing of a physical examination. Because of its shortcomings it is valueless as a record for statistical studies.

Case 13515, on the other hand, illustrates that thoroughness alone is not sufficient in the study and care of a patient, but that it is equally important to be familiar with the principles of disease and its treatment. This patient was a decompensated cardiac a year ago. At that time, he was markedly dyspneic and orthopneic; his heart was onlarged, had a double murmur at the apex, and was fibrillating. There was a pulse deficit of 24, the apex beat being 104 and the radial rate 80. He

was given 4½ grs. of digitalis a day, for a week, with striking improvement. His dose was then gradually reduced until a maintenance dose of 18 grs. a week were prescribed. He continued to do well for four months and on this allotment of digitalis was able to go back to work. But he was then lost track of until he was admitted to the hospital with pneumonia. The history taken in the hospital i very complete, but, curiously enough, no mention is made as to whether or not the patient had continued to take digitalis up to the time of his present illness. The physical examination is also complete, with diagnosis of right lower lobe pnuemonia. Here again, though the heart is carefully described, no mention is made of the rate, nor of a possible pulse deficit. These are serious oversights, because they are points which should have been considered in the attempt to throw some light on the proper treatment. This patient was in the hospital one day before he died. During that time, he was given cafteine sodium benzoate, which could do him no harm, and adrenalin, which might throw an added burden on the already overtaxed heart. But he was given no digitalis and, moreover, was given an intravenous infusion of 1000 cc. of glucose and saline. It would have been far better to relieve the congestion by phlebotomy than to add to the already everburdened heart in this way. Glucose is often valuable in congestive heart failure, but only when it is given in concentrated small amounts, very slow-17. If this patient had not been receiving digitalis,



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he should have been promptly digitalized by Egelson's rapid method. It would have been necessary, in all probability, to give him the proper amount by hypodermic; partly intramuscularly and partly intravenously.

Case 12633 is another incomplete record, but this patient illustrates strikingly the failure of inadequate digitalis therapy. She was an old woman of 82, admitted with congestive heart failure, probably arteriosclerotic in origin. She had a marked general anasarca. Immediately upon admission, she was given massive doses of the tincture of digitalis, with striking improvement. Dram doses were given at four-hour intervals, for four doses, then 15 minims three times a day. But in a month, the digitalis was discontinued for two weeks and then resumed only in a very sketchy manner. Naturally, all the symptoms of decompensation set in again, including the edema. This patient, once digitalized, should have been given a daily maintenanc edose of from one to two cat units a day or of about 15 to 30 minims of a potent tincture. If, in spite of this treatment, she continued to show symptoms of decompensation, with edema, she should have been placed on a low fluid intake. There was a restriction of salt. The diuretics of most value in combating cardiac edema are theocin and salergen with ammonium chloride.

These cases illustrate the importance of good case records. On the one hand, there are records which are short and totally inadequate; on the other, there are long-winded documents which give a mass of detail and still miss the important points. It is obvious that training is required for the proper taking of a history, just as it is for the proper taking of a physical examination. Hence, both should be in the hands of a physician or intern in charge of the case. In many hospitals a course in history taking is given to the interns, and, to serve as a guide, an outline is provided; no history is considered adequate which does not meet the requirements of this outline. It is interesting what important information can be obtained from the history alone. Patients often apply to the physician for some relatively insignificant condition, and careful questioning may reveal some far more important disease, which, unlooked for, might very easily be missed. For the same reason, no physical examination should be considered complete which omits systematic investigations. I believe that the histories and physical examinations are equally important, and that care in taking them often makes extensive laboratory and x-ray studies unnecessary.

In conclusion, I should like to suggest that it might be of value in the report of the deaths, if each physician in charge of an interesting case were given the privilege of discussing his case. In this manner, some interesting information might be gained that is not in evidence in the records. Of course, my criticisms are entirely based on the information obtained from the written records, and the physician in charge of the case might have some data which would make the criticisms without merit. But, for this very reason, let it be emphasized that, in order to obviate misunderstandings, complete records should be kept.

LOUIS B. BALDWIN.

#### **BOOK REVIEWS**

SURGICAL PATHOLOGY OF THE SKIN, FASCIA, MUSCLES, TENDONS, BLOOD AND LYMPH VESSELS, by Arthur E. Hertzler, M. D., Sugreon to the Agnes Hertzler Memorial Hospital, Halstead, Kansas; Professor of Surgery, University of Kansas. Philadelphia, Montreal and London; J. B. Lippincott Company; \$5.00.

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fascia, muscles, tendons, and blood and lymph vessels, in which both clinical and pathologic aspects are set forth, is a monumental task for any one ordinary man. Hertzler is more than ordinary. He has already presented a monograph on surgical pathology of the disease of the bones. In preparation are four other monographs: on the genito-urinary organs, the female generative organs, the gastro-intestinal tract and the peritoneum. Four more are to follow, on the mammary gland, diseases of the neck, diseases of the mouth and jaw, and diseases of the thyroid.

The present volume contains 301 pages, with 260 illustrations. The work is encyclopedic in type and all but defies a review of it.

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Superficially reviewing part I: There are five chapters dealing with ulcers of the skin, benign epithelial tumors, malignant epithelial tumors, fibrosis tumors, and melanomas. There are 153 pages and 142 illustrations.

Again, superficially taking up Chapter One: The author defines the term ulcer; devotes a paragraph to "why ulcers do not heal"; then he gives a general and special consideration of ulcer causes, the nature of the tissue in which ulcers occur, anomalies of the circulation, disturbances of intervention, local irritation, size and form of the ulcer,

nature of the base of the ulcer, hyperplasia of epihelium about the border of the ulcer, classification of ulcers. After this he discusses ulcers of nonspecific and specific etiology.

He apparently has covered the subject. At the end of each chapter is a short but excellent bibliography.

The typographical work and the illustrations are excellent, and a credit to the publishers. This should be a popular reference work.

O. H. B.

HEALTH PROTECTION FOR THE PRE-SCHOOL CHILD. This report was made to the White House Conference on Child Health and Protection by George Truman Palmer, Dr. P. H. Matthew Derryberry and Philip Van Ingen, M. D.

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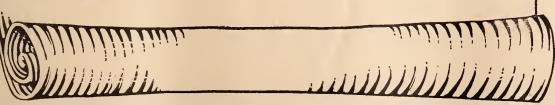
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## BURNS AND THEIR TREATMENT

By N. C. BLEDSOE, M. D.,

Tucson, Ariz.

(Read before the For.y-First Annual Meeting of the Arizona State Medical Association, at Globe, Ariz., April 21-23, 1932.)

In reviewing the subject of burns in the standard books of surgery, one is at once struck with the meagerness of the subject. That there is a distinct need for such a chapter is borne out when the various methods of treatment are as varied as the writers. There should be some definite effort to improve this subject, both as to treatment and end results, for there is much to be hoped for in lessening mortality and deformities. A keen appreciation of this subject should be brought home to every practitioner who is constantly called upon to treat these cases.

The most important phase of these cases is the recognition at the very onset that the patient is suffering from shock, and later from a toxic absorption; and, if not guarded against, contractions and deformities will result.

The term "burn" is generally used to designate the lesion caused by dry heat of 140°F. and upwards, on tissues. The term "scald" signifies the lesion produced by moist heat of 125°F. and upwards.

Burns are usually classified in this country by three classes or degrees. First degree, caused by temporary action of heat from 125°F. to 140°F. Only the superficial layers of the skin are involved; an erythema-sunburn is a good example. Very little constitutional disturbance results unless extensive areas are affected. Even in this form, moderate shock may supervene; e. g., an old man, slightly demented and frail, walking across a field to a neighbor's home, was overcome and lay in the sunshine for several hours. His legs were dreadfully burned and he was brought to the hospital in shock.

In first degree burns there is (1) a dilatation of superficial cutaneous vessels in and about exposed

areas, shown by the erythema; (2) exudation of serum and infiltration of leukocytes, causing swelling; (3) if not excessive, all symptoms gradually subside with scaling, a red surface appears underneath. Repair is usually rapid, all tissues returning to normal in a few hours or days.

Second degree burns, caused by temperatures from 160°F. to 210°F., affect all of the epidermis down to the capillary layers of the corium. They are characterized by blebs and bullae of various sizes, depending upon the rapidity of the transudation of exudates. The blebs are caused by the rapid accumulation of serum and its inability to escape. This form of burn is very painful. When the skin is removed from the blebs, the exposed surface is very tender to touch and to the air. If the papillae are involved, scarring usually results. Constitutional symptoms nearly always follow unless a very limited area is involved.

Infection is very apt to occur in this form, if great care is not used in handling these blebs, or if they are allowed to become too large before being emptied. The longer they remain closed, the greater pressure they exert on the sensitive and tender layers of the corium, causing destruction, and making fruitful fields for infection and later scarring. All blebs should be opened at their base as soon as they form, but do not remove the skin over them, as it acts as a protective covering for the tender underlying layer until nature forms a coating of fibrin over it.

Shock and infection are extremely prevalent; also contractions, unless guarded against.

Third degree burns. This form includes injuries to deeper layers of corium, blood vessels, fascia, muscles, and even bones; a true destruction of tissue. The eschar is usually a brownish leathery non-sensitive layer of dead tissue. The area affected by steam or excessive hot water is grayish white and bloodless. In four to five days the eschar begins to separate at the edges by a suppuration inflammatory process which gradually undermines the burned area and causes it to slough off. If under the eschar there are any areas which have escaped destruction, they form little islands from which epithelium spreads. If the area is completely destroyed, epithelization proceeds from the edges. It is a slow process. The sloughing which occurs is saprophytic in character and it is extremely important to keep other forms of bacteria from invading this rich culture medium, and thus keep out true infection.

Shock always follows this form of burn. Pain is usually severe and constant. There is an old saying to the effect that cases of burns that do not sleep the first night, die.

No single theory satisfactorily explains the profound changes which follow a severe cutaneous burn. The theories evolved which partially explain the symptoms are: (1) Interference with the normal function of the skin. (2) Changes in the blood resulting in altered function. (3) Phenomena explained on a basis of absorption of a toxic material. Many of the older writers laid great stress upon the disturbances of the function of the skin, respiration, excretion, temperature regulation, and sensation. More recent writers are pretty well agreed that they may be contributory factors but do not explain all phenomena.

Underhill has shown that marked concentration of the blood occurs and, if this is allowed to persist, it is incompatible with life. It is known that hyperglycemia and, at times, glycosuria occur during the initial period. It has been established that blood chlorides are markedly depressed. It has been further demonstrated that the capillaries are more permeable than normal and that blood plasma is lost into the tissues. Repeated estimates of the concentration of the blood, as measured by hemoglobin value, give excellent estimate for prognostic evaluation. An increase of 40 per cent, if maintained for any length of time, is incompatible with life. When it reaches 125 per cent of normal value, life is precarious.

Toxemia. According to many recent investigators, the toxemia theory is the most convincing; i. e., that there is at the site of the burn a toxic substance, proteid in character, the absorption of which is responsible for the constitutional symptoms.

That burns cause a definite toxic material, is proved by vascular parabiosis; e. g., of two animals having their vascular systems connected, one animal is burned. They are carefully watched. They both run temperatures. The connection is severed; the burned animal dies and the other gets well. If they are allowed to remain connected, both die.

#### A FEW FACTS RATHER ARBITRARILY STATED

- 1. All burns of the first degree are fatal if twothirds of body surface is burned.
- 2. All burns of the second degree are fatal if one-half of the body surface is involved.
- 3. All burns covering one-third of the body surface are exceedingly serious, if not fatal.
- 4. All burns covering one-tenth of body surface should be considered serious.
- 5. In the new-born, a burn one-tenth to one-twelfth of body surface is invariably fatal.
  - 6. Burns of abdomen give highest mortality.
- 7. Burns of genitalia, anterior thoracic surface, and face, cause symptoms out of proportion to the area of allotment.
- 8. Burns of flexor surface are more dangerous than those of extensor surface.
- 9. First week after accident is most fatal for burns.

#### TREATMENT

- 1. Give morphine enough to control pain.
- 2. Place patient in a warm room.
- 3. Apply external heat.
- 4. After pain is relieved, remove clothing very gently.
  - 5. Force fluids by mouth.
- 6. Give intravenous glucose, 5 per cent, in normal saline solution, later by proctoclysis, hypodermoclysis.
  - 7. Use stimulants; caffeine.

Local Treatment: Accepting the toxemia theory as the most plausible one, the rational treatment is one that will prevent the absorption of the toxic material. We turn to tannic acid. Davidson in 1925 brought it into general use and it has revolutionized the treatment of burns. Tannic acid is an amorphous powder which is readily soluble in water, glycerine, and alcohol; insoluble in ether or chloroform. It precipitates protein. Thus, it precipitates the devitalized tissues of burns and thereby prevents the absorption of toxic substances into the circulation. It forms a protective coating against chemical, bacterial, and mechanical, action as well as against sensory and inflammatory irritation.

Apply a 2.5 per cent to 5 per cent solution of tannic acid in water. It is essential that a fresh solution be made each time it is used. Spray afflicted area. Dry by means of lamps. Use a 200 Watt lamp if no other means are available. Repeat the procedure till eight or ten layers are made, or until the whole area is brownish.

As blisters occur, puncture them so that the serum can escape and allow tanning of the tissue. Pain is

diminished; it is rarely necessary to give opiates after first 24 hours. Keep wound exposed, put cradle over affected parts covered with a sterile sheet. Tan the area each day.

The tanned area forms a thick, leathery, protective covering. Healing goes on under its surface with surprising results. There is no absorption, no infection. It is amazing how large, extensive areas will completely heal under this plan of treatment. Caution: Do not use any softening lotions on parts, as boric acid, et cetera; else you will have a reabsorption of toxic material.

Tannic acid is the ideal burn dressing, because: (1) It is analgesic—protects nerve endings; (2) it lessens toxemia; (3) it is a protective dressing; (4) scar formation is less; (5) scar tissue is much more pliable than other scars; (6) contractions are less.

#### CASES

Case No. 1. M. T., girl, aged 6, weight 40 pounds, height 50 inches. September 20, 1931, clothes caught fire from a carbide lamp. She was burned on the left side of body from axil a to knee. Burns were of second and third degree. She was brought to my office, a distance of 8 miles. She was first given morphine sulphate gr. 4/8, to relieve pain. Treated



Fig. 1. Photograph of left side of patient (Case 1), showing scars and bands of normal skin where clastic bands of bloomers gave partial protection.



Fig. 2. Frontal view of patient in Case 2, after recovery.

with 2½ per cent aqueous solution of tannic acid applied to the burned areas on layers of gauze. These were changed daily but kept saturated with tannic acid solution.

All areas were healed by February 1, 1932. No grafting was necessary. Epithelization was good. There are no contractions; all motions are perfect. About the waist and thigh can be seen two bands of normal skin where the elastic bands of her bloomers protected her from being more deeply burned. These bands have afforded ample play between burned areas and have seemingly stretched. No infection whatever.

Case No. 2. A. H., age 13, weight 101, height 64 inches, was burned January 4, 1932. He had prepared to go to bed, dressed in canton flannel pajamas, with a heavy woolen dressing gown over them. As he was sleeping on an open porch and the weather was very cold, he took a hot water bag to bed with him, filled with boiling water. He drew the hot water bottle across his abdomen, when it burst, scalding him. The heavy clothing about him retained the heat and caused more extensive and severe burns than would otherwise have resulted. He was burned from lower costal arch to middle of thighs on all sides of body. The burns were all of second and third degree.

He was given morphine sulphate grs. 3s, to get him easy, and this was the last morphine that he needed. His treatment was 2½ per cent to 5 per



Fig. 3. Posterior view of patient in Case 2.



Fig. 4. Right lateral view of patient 2.

cent aqueous solution of tannic acid. It was applied every hour and dried until 8 or 10 layers had been applied. It caused a tanning of the burned area and the portions where the body was burned to third degree, a thick black tenacious covering. The third day, he began having a high temperature. This persisted for several days and then gradually subsided. Fluids were crowded. The urine for a few days was very high-colored but never had any albumin, blood, or abnormal finding. There was never any infection and no skin grafting. The resulting scars are soft, pliable, and he has perfect motion, no contractions. Finally discharged April 1, 1932.



Fig. 5. Left lateral view of patient 2.

#### DISCUSSION

DR. E. W. ADAMSON (Douglas): I have never had any experience with tannic acid. In my work at the smelter, burns frequently occur, and we have used picric acid in a vaseline dressing, combined with a local anesthetic. A very severe and extensive burn is a great deal like a generalized peritonitis: there is nothing much you can do that avails. I am glad to hear that Dr. Bledsoe has had such success with tannic acid.

DR. W. A. HOLT (Globe): I believe we have all been a little slow in recognizing the severity of burns. I believe that picric acid is very good for their treatment because it is both an antiseptic and an anesthetic.

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DR. C. E. IRVIN (Miami): In the last year the Lily Company has put out a preparation with 5 per cent tannic acid. I used it recently in a case and found that tanning took place in just two applications, and that healing followed satisfactorily.

DR. GEORGE GOODRICH (Phoenix): I believe that the reason tannic acid solution in the treatment of burns has not been more extensively used, is that it has to be freshly prepared. In hospital practice it is comparatively simple, but in lay practice it requires more time. Burns are very painful wounds. The patient and family wish relief secured immediately and are unwilling to wait for the doctor to secure a freshly compounded solution at a drug store and have it sent to the home.

DR. H. W. R. RICE (Morenci): It is in extensive burns that the tannic acid treatment is of particular importance. Unless the doctor is the first to treat the burn he will probably find that some greasy substance has been applied. In such case, every trace of grease should first be removed by ether before the tannic acid dressing is put on.

DR. BLEDSOE (closing): Scars resulting from burns treated with tannic acid are softer, more pliable, and do not contract as do ordinary burn scars.

#### THE NEUTROPHILE LEUKOCYTE

HARLAN P. MILLS, M. D., F. A. C. P.
Phoenix, Ariz.

(Read before the Forty-first Annual Meeting of the Arizona State Medical Association, held at Globe, Ariz., April 21-23, 1932.)

Following Hewson's discovery of the colorless corpuscles of the blood, our knowledge of these cells was of rather slow development until Ehrlich introduced his method of fixing and staining blood films and made possible a classification based on their morphology and reaction to anilin dves. The commonly accepted classification is: polymorphonuclear neutrophilic leukocytes, polymorphonuclear eosinophilic leukocytes, polymorphonuclear basophilic leukocytes, lymphocytes, transitionals, and mononuclear leukocytes. The polymorphonuclear neutrophilic leukocytes are by far the most numerous of the leukocytes in the circulating blood and occupy the most prominent place in the reactive process against progenic infections. Morphologically the neutrophilic leukocyte is distinguished from all other cells of the body by the contour and structure of its nucleus. At first it was considered as composed of multiple nuclei, but, by improved staining technic this is shown to be a single nucleus with multiple lobes connected by thread-like filaments or broader bands of chromatin. The number of lobes varies from two to five, though even eight or nine

are occasionally seen in certain pathologic conditions, notably, in pernicious anemia and multiple myeloma-This cell shows a characteristic granular structure of its cytoplasm when stained by usual methods. Ehrlich's original stain was a triple stain made up of acid, basic and neutral dyes, and these granules showed affinity for the neutral dye; hence, the term neutrophilic. These granules vary much in tone, apparently depending on the age of the cell, the younger cells reacting more to the basic dye, while the more aged show eosinophilic tendencies. The relative age of an individual cell is indicated also by the conformation of its nucleus, the more mature cells having nuclei in the form of two to five lobes connected by filaments of nuclear material, while in the immature cells the nuclei are in single masses of irregular contour.

The neutrophilic leukocyte belongs to a group that may be called "end cells"; that is, cells which are incapable of further differentiation or multiplication. It is the product of differentiation of the neutrophilic myelocyte of the bone marrow. During this process of change, a non-motile cell is endowed with motility, a spherical nucleus becomes lobulated, and the characteristic granules are increased. In the bone marrow these maturing cells are massed in groups of leukogenic centers, the more mature at the periphery and adjacent to a thin-walled venous sinus, apparently waiting for the moment when they shall enter upon adult life. These leukogenic centers normally furnish sufficient numbers to meet physiological demands, but when pathological conditions arise, additional centers are developed to supply the excessive requirements, these new centers replacing adipose tissue of the bone marrow. The new cells enter the blood stream by their own ameboid movement, this function of motility not being called into use again during the normal physiologic life of the cell.

When not called upon to resist infection, this cell passes its existence in the blood stream after it has emerged from the bone marrow. The length of this existence has not been determined, but is probably measured by days or, perhaps, even by hours. Fragmented cells are found in any blood film. These dead or dying cells are filtered out by the spleen and liver.

Under strictly physiological conditions this cell can be assigned no definite function and rapidly passes to its grave in the splcen and liver. However, upon the invasion of the body by pathogenic organisms, it forms the first line of defense. This is

especially true when infection by pyogenic bacteria occurs, but is true to a greater or less degree in the exanthemata and practically all acute infections.

The importance of these cells in the reaction to infection was recognized in an incomplete way by Metchnikoff, and they were given a prominent place in his theory of phagocytosis. Prone to jump at conclusions rather than arrive at facts after careful investigation, he, nevertheless, was partly correct. With his crude lens he observed wandering cells with ameboid movement and saw them, in star-fish larvae, pick up carmine granules which he had injected. From this he concluded that they must eat up microbes also and so protect star-fish larvae from infection. He wrote, "our wandering cells, the white cells of our blood, they must be what protect us from invading germs; they are the cause of immunity to disease; they are what keeps the human race from being killed off by malignant bacilli." From this imperfect piece of research, it has required many years of precise and carefully controlled investigation by Koch, Ehrlich, and illustrious followers, to arrive at our present knowledge of immunity and the part played in the process by the leukocytes.

Neutrophilic leukocytes are normally found only in the blood stream and bone marrow, and are never found in the tissues, as are the lymphocytes. Just as this cell arrived in the blood stream by its own motility, so it passes through vessel walls into the tissues by is own ameboid movement, when it is called out by a positive chemotaxis in the face of ar infection. Apparently there are many chemotactic substances, some more active than others, probably the most active being one, of undetermined character, present in necrotic tissues. By virtue of its possession of a proteolytic enzyme it takes part in the digestion of necrotic tissues and aids in the autolysis of exudates as in lobar pneumonia. It has been thought that this cell could not be a factor in antitoxic or bacteriocidal immunity, for the reason that it is an end cell and has no offspring to whom it can bequeath this characteristic. It is in the presence of acute pyogenic infection that the neutrophile leukocyte finds its most important field of activity, and when so called upon, passes from the blood stream into the tissues and, coincidently, the reserves in the bone marrow are called out, resulting in a leukocytosis.

The average normal leukocyte count is usually placed at 7500 per cubic millimeter, but this may vary according to the time of day, certain investigations showing a reduction of as much as 5000 cells

in counts made at 2 to 4 a. m. as compared with those made in the afternoon. Sabin found half-hour variations of 2000 cells. However, in the face of unexplained variations, the total leukocyte and differential count is the most frequently used laboratory procedure and is deserving of this preeminence if properly interpreted and correctly correlated with the clinical findings, as it discloses an intimate insight into the reactive changes taking place between the body and an invading infection.

The more practical application to clinical diagnosis of the changes in the leukocytes as a result of acute infection, was given by Sadler in 1892 and by Cabot in 1894, showing that a leukocytosis is usually found in exudative diseases except in tuberculosis; and Wilson in 1901 called attention to the finding that in purulent conditions the percentage of neutrophiles was usually above 80 per cent. It was Sondern, in 1905, who formulated a rational explanation of these reactions to acute infections. He expressed the opinion that the degree of leukocytosis indicated the amount of body resistance, that the degree of neutrophile-cell increase indicated the severity of the infective process and that the value of this laboratory examination in diagnosis and prognosis lies not in either count alone, but in both and their relationship.

In order to portray this relationship graphically, Gibson devised a chart which shows at a glance the relative height of both counts, thus giving a clearcut picture of the degree of body resistance as compared with the severity of the infection. He took a leukocyte count of 10,000 as the upper limit of normal, and 75 per cent of neutrophiles as the high normal, and on his chart places these on the same horizontal line. He calculated that each rise of 1,000 in the total count should be accompanied by a 1 per cent rise in the neutrophile count. So long as this proportion was maintained the figures could be connected by a horizontal line, which was interpreted to mean that the body resistance was proportionate with the severity of the infection. If the nuetrophile count is relatively high, the chart shows an ascending line, indicating that the resistance is becoming overwhelmed by the severity of the infection. On the other hand, a neutrophile count relatively low leads to a descending line, indicating that the body resistance exceeds or is overpowering the infection.

In 1904 Arneth proposed a definite formula for normal neutrophile cells on the basis of the number of the lobes of the nucleus, and interpreted deviations

from this standard as being of value in prognosis. This formula is based on the theory that, as the age of a neutrophile cell increases, the number of its lobes increases, and also that the young cells are thrown into the blood stream as an addition to the defense force against an overpowering infection. This theory must also assume that all these cells start out with an equal chance in life and that each one shall pass from a single-lobed nucleus to a five-lobed, at the same rate of speed. Arneth divided the neutrophile cells into five classes and these were subdivided, and in addition there were classes and subdivisions of lymphocytes and mononuclears, making in all eightyone subdivisions. This formula is very interesting but much too complicated for practical use and the large variety of cells to be computed permits the injection of such a degree of personal equation that its value is definitely reduced. However, we are indebted to Arneth for showing that the age of the neutrophile is indicated by the extent of nuclear segmentation and that in acute infections the immature cells increase in number, increasing with the intensity of the infection and declining as convalescence and recovery occur. This increase of immature forms is evidently due to a breaking down of the normal balance of leukocytic formation and destruction, the presence of a leukocytosis being the result of stimulation of the leukogenic centers by bacterial toxins, and leukopenia due to inhibition of these same cen-

In 1920 von Schilling presented a modification of Arneth's formula, greatly simplifying the classification and rendering the count of much greater clinical value. He made four divisions of the neutrophile cells, placing all those with segmented nuclei in class four, groups one to three inclusive being made up of myelocytes and other immature forms.

Both Arneth and Schilling emphasized the importance of studying the nuclear conformation and showed that, in severe acute septic processes, the cells with nonlobulated nuclei were definitely increased, a phenomenon to which was given the name "shift to the left," or "regenerative shift." The prognostic value of this change was recognized and Schilling, after citing a case of sepsis, says, "thus we see that the shift accompanies the whole septic process in a very definite and significant fashion, often effectively supplementing the clinical findings and at times elucidating and surpassing the clinical data."

Methods intended to simplify the classification of neutrophiles in order to show these qualitative changes have been proposed by Pons and Krumbhaar,

Cooke and Ponder, and by Piney. Cooke and Ponder prepared a classification based upon the divisions of the nucleus connected by chromatin filament, those with an undivided nucleus in class one, those with two lobes in class two, and so on for classes three, four and five. Farley, St. Clair and Reisinger, in reviewing the classifications already proposed, came to the conclusion that the essential, practical point is the separation of the young forms from the more mature and highly differentiated cells, and suggested two divisions, the "non-filament" and the "filament neutrophiles," placing in the former division those of Cooke and Ponder's class one, and in the latter those of classes two to five inclusive. Blood counts in 190 presumably normal adults, gave an average of 8 per cent non-filament cells and they placed the high normal at 16 per cent, although recognizing this as a somewhat arbitrary figure. They considered this to be the most delicate method of studying the reaction of bone marrow to infections, and to be of especial value in diagnosis of cryptic infections.

Recently Mullen and Large emphasized the prognostic value of this procedure and, in reviewing a large series of cases, found that non-filament counts of 50 per cent and over offer a very guarded prognosis, most of such cases terminating fatally. They found that a filament-nonfilament count follow more closely the course of an infection than the total leukocyte count and was valuable in foretelling complications arising during convalescence.

This classification of filament and non-filament neutrophiles can be made with only a very small expenditure of time and by any trained laboratory technician and we believe should come into more common use. Its greatest value will be found when considered in relation to the total and differential leukocyte count and correlated with the clinical findings. In order to portray this graphically, I have prepared a modification of the Gibson chart so arranged that both the neutrophile percentage and non-filament count will be shown and their relationship with the total leukocyte count. Chart 1. On this chart, an ascending line should be considered as a danger signal while a transverse or descending line suggests a satisfactory reaction. In the patient giving the count indicated by line A, which was a case of acute appendicitis, with total count of 15,000-85 per cent polynuclears and 55 per cent non-filament forms—the prognosis is much more grave than in the patient with the count indicated by B, where the total count is 30,000 and polynuclear neutrophile percentage 90 per cent, but the non-filament count

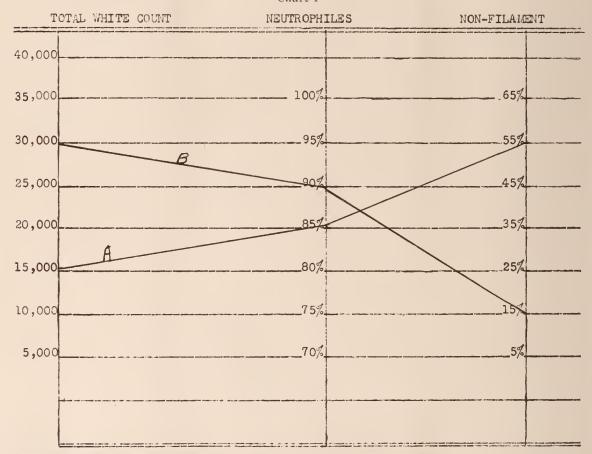
only 15 per cent. It is also recommended that in acute and post-operative cases, daily counts be mad and that these be charted on the same sheet so that deviations from day to day may be noted at a glance.

The value of frequently repeated blood counts in acute infections cannot be over-emphasized, as they give us from day to day a picture of the patient resistance as compared with the severity of the infection, and the findings are easily interpreted at a glance when graphically portrayed on a chart.

#### DISCUSSION

DR. ROBERT S. FLINN: I am more or less familiar with the blood work that Doctor Mills has been carrying out, and have been following its results with considerable interest. There is no doubt that a great deal can be gained from filamentous and non-filamentous forms. However, from my experience, I believe it is well to combine this information with that obtained from studies of the total white count together with monocytic and lymphocytic ratios.

Chart 1



## RECENT ASPECTS OF THE EPI-DEMIOLOGY AND THE SERUM TREATMENT OF POLIOMYE-LITIS

BEATRICE F. HOWITT\* San Francisco, Calif.

The recent advances in the knowledge of poliomyeliti; have largely been along the lines of epidemiology and immunity, together with the search for an

\*From The George Williams Hooper Foundation of the University of California, San Francisco.

offective serum treatment. The following report endeavors to review some of the current ideas in these fields and is augmented by recent experimental observations.

#### **EPIDEMIOLOGY**

Poliomyelitis is a disease of the temperate or colder climates and becomes less prevalent nearer the equator. At the same time, it also has a seasonal variation, being more frequently present during the summer and autumn than in the winter or spring, although sporadic cases are occasionally reported for the latter seasons. This seasonal variation holds true for the southern as well as for the northern hemi-

sphere. In Australia and New Zealand, the peak of the morbidity curve is in February and March, when the climatic conditions correspond to ours for August and September. This variation was also illustrated in the 1930 epidemic in California, when there were two peaks in the curve, one in July for southern California, and another in October for San Francisco and vicinity, corresponding to our period of warmer weather.

Aycock (1928) believes that the age distribution of poliomyelitis corresponds to that for measles and for diphtheria; that there is a greater preponderance of cases in the younger age groups in urban than in rural communities for all three diseases, and that the case incidence in the various age groups is directly proportional to the concentration of the population. Reasoning from the similarity of the age distribution of poliomyelitis, measles, and diphtheria, Aycock deduces that the age distribution in poliomyelitis is dependent upon immunity, largely subclinical. He shows that, although this disease has a lower incidence in the southern United States than in the northern, the age distribution is of the same order in both sections. He believes this is an indication that immunization in the South is just as rapid as in the North, and that early infection in the South may account for the relatively more extensive subclinical immunization.

Aycock and Kramer (1930) have given experimental evidence to show that serum from a group of normal adults in a southern population was capable of neutralizing the virus in vitro. They obtained neutralization with eighteen out of twenty-one serums from people giving a negative history of poliomyelitis. They have also found that serums from other groups of so-called "normal" individuals contained neutralizing antibodies for the poliomyelitis virus, while in another report they have shown that there is a passive transfer of immunity from mother to infant. This, however, is only transient, as evidenced by the susceptibility of children between 1 and 5 years of age. They found that the serum of urban mothers and their newborn infants gave a positive neutralization test in 83 per cent of the children and in 83 per cent of the mothers, with a complete correspondence between mother and child.

Other workers have also reported upon the neutralizing ability to be found in the serums of normal individuals. Shaughnessy, Harmon, and Gordon (1930) obtained positive tests in serums from ten normal adults and six normal city children, in dilutions as high as 1 to 30 in the majority of cases.

Fairbrother and Brown (1930), Faber (1930), Schultz and Gebhardt (1931), Soule and McKinley (1931) and Brodie (1932) all have reported upon this same characteristic of certain supposedly "normal" serums.

From the findings of these different men in regard to immunity in people showing no history of poliomyelitis, and since apparently the disease is irregular in its attack rate, it is quite probable that a wide-spread immunization, especially in urban districts, must occur early in life, either due to subinfective doses or to an abortive attack of the disease. Kramer and Aycock (1931) have recently shown by neutralization tests in monkeys that the same degree of immunity occurs among a group of suspected abortive cases, as among a normal group of children, so that immunization probably occurs throughout the year and not entirely at the time of an outbreak.

Although Aycock favors the theory of subclinical infection, yet he also advances a second hypothesis (1929) to account for this general immunization, what he calls "autarcesis" (Greek, self, keep off), or the ability inherent in the physiological constitution that renders a person less susceptible to the disease. This is in contrast to immunity acquired from direct infection.

#### SUSCEPTIBILITY

The work of these men may throw some light on the wide variation in individual susceptibility even within one family. Many children, though exposed, never contract the disease, while parents developing poliomyelitis may not necessarily infect their children.

According to MacAusland, the susceptibility rate of individuals under 13 years is about 2 per cent. The most susceptible age period is 2 to 5 years, with 2 the age of greatest susceptibility. The disease, however, is not confined to children, as is now well known. This was illustrated in the 1930 California epidemic, when there were many cases over 18 years of age, with a high mortality rate.

Draper has advocated the idea that individuals with certain types of features are more susceptible, while Jungleblut and Engle have recently reported that injecting extracts of pituitary glands into young monkeys rendered them immune to subsequent infection with the virus. These findings may perhaps be correlated with Aycock's theory of autarcesis, so that, in the future considerations of immunity, one may have to take into account the inherent physiological constitution of the individual.

#### SERUM TREATMENT

The use of serum treatmet was first advocated by Netter in France, about 1910 and 1912. Since then several types have been tried: (1) normal human serum, (2) Rosenow's antistreptococcus horse serum, (3) convalescent human serum, (4) hyperimmune horse, sheep, and goat serum.

- 1. Normal Human Serum. Since, as previously mentioned, a number of people have reported the presence of antiviral substances in the blood of so-called "normal" individuals, such tested antiviral serums have been advocated in the treatment of poliomyelitis. The serum from a group of blood donors was used by Faber of Stanford University, in 1930, since he had found that ten out of thirteen donors possessed serum with neutralizing antibodies. No published record has been made of the results.
- 2. Rosenow's Antistreptococcus Serum. Rosenow (1930) strongly advocates the use of a horse serum containing antibodies against the streptococcus which he considers to be the etiological agent of poliomyelitis. He has treated over 1300 cases with it and considers the results favorable. Stewart and Haselbauer (1928), on the other hand, were unable experimentally to obtain any neutralization of the virus with Rosenow's serum, either concentrated or unconcentrated. They do not consider that there is any sound basis for its therapeutic use.
- 3. Convalescent Human Serum. During 1910, it was experimentally proved by Flexner and Lewis, Landsteiner and Levaditi, Romer and Joseph, and Netter and Levaditi, that the serum of recovered monkeys and of human beings, respectively, contained neutralizing substances against the virus of poliomyelitis. The use of convalescent serum therapy in this disease has, therefore, been based on this evidence.

Netter, in 1910, treated thirty-two cases with 5 to 13 cc. amounts of serum intraspinally. Six patients recovered completely, fiften showed varying degrees of improvement, in three there was no change, while eight died. Since then, convalescent serum has been tried with varying degrees of success, given intraspinally, intravenously, or combining the two methods, as advocated by Amoss and Chesney in 1917.

Aycock and Luther in 1928 treated 106 cases diagnosed in the preparalytic stages, and obtained fairly successful results as shown by the low mortality rate, low average total paralysis, and a low degree of paralysis of the more severe types.

In a recent report by Kramer, Aycock, and their

associates (1931), some doubt is thrown on the efficacy of human convalescent serum therapy. Since in the 1931 outbreak, in New York and Connecticut, there was a dispute among the physicians as to the use of this serum, an opportunity was afforded to study the effects of the disease on a group of eighty-two cases, approximately one-half of which were untreated. The serum was given intravenously and intraspinally and careful muscle observations were made. Of the eighty-two cases, forty-two, or 51 per cent developed some paralysis. The course of the epidemic, however, was mild. From the analyzed data they were unable to obtain any statistical evidence that convalescent serum is effective. They do not discourage its use, however.

In France, since 1922, convalescent serum has been used intraspinally, often followed by repeated intramuscular injections. In California, Shaw, Thelander and Fleischner in 1925, and, again, Shaw and Thelander in 1928 and 1931, have reported favorably on the intramuscular administration of serum in the preparalytic stage. In one series (1928) of eighty-one cases, forty-three received intramuscular treatment. There was no fatality nor paralysis among the seventeen cases treated within the first forty-eight hours after onset, while the amount of persistent paralysis and the mortality rate increased the later the serum was given in the course of the disease.

This method of administration was used exclusively in the Canadian epidemics of 1928 and 1929,—25 cc. of convale cent serum being given as the standard amount. During the past few years in California the intramuscular treatment has been recommended and used extensively, especially in the northern part of the State.

Since 1928, the Hooper Foundation in San Francisco has endeavored to maintain a supply of convalescent plasma and to act as a collecting and distributing station for the central part of the State. During the epidemic of 1930, there was 22,725 cc. of plasma from recovered cases distributed to various doctors or hospitals in sixteen different counties. During the height of the epidemic in September and October, an average of 400 to 500 cc. of plasma was sent out in one day.

In order to maintain such a supply, the following methods were employed: A list was kept of recovered poliomyelitic cases, including name, address, tel-cphone number, date of recovery, and so forth. The names were usually obtained either through the agency of the local newspapers or from different hospitals receiving such cases. The donors either

CORRECTION:—The last paragraph of this page should read as follows:—"In the United States, Neustaedter and Banzhaf, in 1917, reported upon the preparation of an antiviral horse serum, while later Meyer, Park and Banzhaf (1929, 1931) also published upon the successful immunization of horses," etc.

Added reference:—Neustaedter, M., and Banzhaf, E. G., Jour, A. M. A., 1917 v. 68: 1531-1533.



came to the laboratory to be bled or some one called at their homes. Excellent cooperation was received from the Health Departments of several cities where the Health Officer had gathered the recovered patients into a central place so that many could be bled at one time.

As a rule, blood was taken from the individuals having had the disease from one month to three or four years previously. Occasionally people were used who had had the disease many years before. Their plasma was usually pooled with that from more recent cases.

The blood is withdrawn aseptically into 250 cc. centrifuge bottles fitted with a two-hole rubber stopper, one side with glass and rubber connections with a mouthpiece, and the other arranged for the needle. After adding 5 cc. of 25 per cent sodium citrate solution, the apparatus is wrapped and sterilized in the autoclave for one-half hour. A sterile needle is applied to the end with the adapter before using. Fifty cubic centimeters of blood is withdrawn from children under 7 years of age, 100 cc. from those 8 to 10 years, and 200 cc. or more from older children and adults.

The blood is centrifuged directly in the bottle after removing the connections and applying a special rubber cap. The supernatant plasma is removed aseptically with a pipette, into a sterile flask. The material is tested for sterility and a preservative is added.

Blood is also removed for the Wassermann test by attaching a syringe to the needle left in the vein after disconnecting the bleeding bottle. When the sterility and Wassermann tests are found to be negative, the plasma from several donors is pooled and the material is bottled in 50 cc. amounts. It is then stored in the refrigerator until needed.

Fifty cubic centimeters is usually considered one dose, and is advocated for children under 7 years. Adults and older children are given 100 cc., as the initial dose, administered intramuscularly, repeated if necessary, until a permanent drop in temperature is secured.

Shaw and Thelander have advocated the intramuscular method of treatment, principally because the rate of absorption is rapid and because the plasma can be easily and quickly administered without any of the dangers accompanying either the intraspinal or the intravenous injections. Although the two latter routes are undoubtedly the most direct, yet both entail certain technical difficulties that are not met with in the intramuscular method.

In order to compare the three different methods of serum administration, experiments were conducted in monkeys (Howitt, 1932) in which the treatment was carried out according to methods similarly used in human subjects. Fifty cubic centimeters of tested convalescent monkey plasma was used as a single dose for the intramuscular method, while 5 cc. of serum was usually given intraspinally and 20 cc. intravenously. Seventy-nine monkeys were used in five different experiments, in two of which the virus was injected intracranially and in three intranasally. Of fourteen animals treated intramuscularly during the preparalytic stage, an average of 81.6 per cent recovered, although all except one had some form of residual paralysis, while an average of 18.4 per cent died. Of eleven treated in the same stage of the disease by the combined intraspinal and intravenous method, an average of 33.3 per cent recovered, though not without paralysis, while the mortality averaged 66.6 per cent. In the group of fourteen untreated controls, 54 per cent recovered with varynig degrees of paralysis, while 46 per cent died. The mortality was about 100 per cent when treatment was given by either method in fourteen animals showing early or advanced paralysis.

In estimating the results of these experiments, it is evident that there was neither 100 per cent cure for the treated animals nor 100 per cent fatality among the untreated ones, but, as far as could be judged, the intramuscular use of serum from convalescent monkeys was as effective as the combined intraspinal and intravenous method. It was also clearly shown that to be effective the serum should be administered during the prodromal or preparalytic periods, since paralysis, or even death, was not prevented when treatment was delayed until the more advanced stages.

4. Hyperimmune Serum. Although no laboratory animal except the monkey has proved susceptible to inoculation by the poliomyelitis virus, yet various attempts have been made to immunize so-called "refractory" animals to the disease in order to obtain a standardized immune serum for therapeutic purposes.

In 1918, Pettit in France reported the successful immunization of a sheep, and later a horse, to the virus. These serums of Pettit have been used in Europe during the past few years with varying degrees of success.

In the United States, Meyer, Park, and Banzhaf, in 1929 and again in 1931, have reported on the preparation of an antiviral horse serum which they

have been able to concentrate by precipitation methods. Fairbrother in 1930, and Schultz and Gebhardt in 1931, obtained an antiviral horse serum that neutralized the virus in the laboratory experiments but was not used in human therapy.

Recently (1932) we have been able to report the successful production of an antiviral serum by immunization of two goats and a sheep to poliomyelitis virus. They were given weekly inoculations of centrifugated, unfiltered 5 or 10 per cent brain and cord suspensions from monkeys succumbing to experimental poliomyelitis. During the past year two more sheep have also been immunized.

The serum from trial bleedings was tested by the *in vitro* neutralization method. Different amounts were added in series to 0.3 cc. of a 5 per cent virus suspension. The mixtures were incubated at 37° C. for two hours, kept on ice over night, and injected intracranially into separate monkeys. Control animals given mixtures of virus and normal sheep or goat serum were injected at the same time. Recent tests have shown that neutralization occurs with the serum of one sheep (117) in a dilution of 1 to 100, and in the others (404, 484) in a dilution of 1 to 200.

Experimental evidence has also been given to show that there is a certain protective power to these serums when used prophylactically before the virus inoculation.

In order to determine the potency of stored immune serum, samples from sheep 117 were again tested for neutralizing power, after being stored in the icebox for five, seven and ten months, respectively. Of the undiluted serum kept for ten months, 0.1 cc. neutralized 0.3 cc. of 5 per cent virus, as did also the same amount when stored for seven months. It is evident, therefore, that the sheep serum retains its potency for some time.

Poliomyelitis, as demonstrated experimentally in monkeys, is a more severe disease than that found in men. It is, therefore, interesting to note the results of using the serums from both the goats and one sheep (117) in a small series of cases during the 1930 epidemic in San Francisco. As reported last year they were used at this time by Doctors Shaw, Thelander and Limper, at the Children's Hospital.

Of the twelve cases treated in the preparalytic stage with animal serum, eight showed complete recovery, and four only transient paralysis. Of the four treated in the same stage with a combination of animal and human serums, two showed no ill effects and two had transient paralysis with subsequent

recovery. Three cases were given the animal serum alone after onset of paralysis, and, of these, one died, one showed permanent paralysis, and the other recovered. Eleven people were treated with the combined serums in the same stage. In this group there were two deaths, six cases with permanent and two with transient paralysis, respectively, while one recovered.

There results, especially among the preparalytic cases, compare very favorably with those for the convalescent serum alone and give encouragement for the use of a known standard serum available in large quantities.

In considering the use of these different advocated serums, one may say (1) that there is no experimental evidence in support of Rosenow's antistreptococcus horse serum; (2) that tested normal human serum may prove effective, but has not yet been given sufficient trial; (3) that the administration of known standardized hyperimmune serum is theoretically sound but the results are yet to be reported for a large number of human cases, while (4) the use of convalescent human serum has both experimental evidence in its favor and the benefit of many years of practical application. So far, just as with the treatment experiments in monkeys, there has not been given any clear-cut demonstration of its assured constant effectiveness, as especially shown in the mentioned report of Kramer and Aycock. It may be of value with certain workers, when given early in the preparalytic stage, but in the hands of others it may prove a disappointment.

Although the use of human convalescent serum is apparently a rational procedure and has been extensively employed, yet the results have lacked uniformity. Certain questions, therefore, naturally arise in connection with its administration. It has been more or less taken for granted that, since serum from certain recovered cases contains neutralizing antibodies, all such serums should contain these substances. In a sudden outbreak of the disease, there is seldom time nor the available monkeys to make a detailed examination for the neutralizing ability of each serum. It is usually presumed that, since the individual had recovered from an attack of poliomyelitis, the serum has a certain neutralizing value. Probable differences in the potency of each serum are conceded, however, so that a pool of several is advocated. That there is this difference in pools has recently been given by Brodie (1932) in Montreal, who reports that "pooled serums from various groups may vary considerably in their strength."

The following questions, therefore, arise in considering the choice of a suitable donor: (1) What is the neutralizing value of each human convalescent serum? (2) Is the serum from a badly crippled individual as potent as that from a spontaneously recovered case, or from one showing only a slight residual paralysis?

Since the majority of the future convalescent poliomyelitic cases will have received some type of serum treatment, other questions naturally follow: (1) Should one presume the presence of antiviral substances in the blood of patients who have themselves been recently treated with the serum from recovered cases? (2) Can their serums be of service to new cases or has there been merely a passive transfer of antiviral substances without actual development of antibodies?

Since these points seem worthy of consideration, two series of neutralization tests were undertaken on the serums from recovered poliomyelitic cases.

In one series, serums were obtained from twentytwo individuals who had been treated either with human convalescent serum, immune poliomyelitic sheep serum, or with a combination of both. They were largely taken from recently recovered cases at intervals varying from seven to fifteen days, to over four years after the onset of the disease.

From the neutralization tests it was found that: (1) Only 6 (27.2 per cent) of the twenty-two serums completely neutralized the 5 per cent virus; (2) Two (9 per cent) gave a partial protection in the monkeys, while (3) fourteen (63.6 per cent) gave no protection against the virus.

The control monkey in each case developed the disease.

Of the six cases giving a positive neutralization test, three had completely recovered from the disease, while the other three had varying degrees of paralysis with subsquent recovery. Both of the patients whose serums gave a partial neutralization had shown some paralysis. Of the fourteen other individuals giving a negative test, three had extensive and three transient paralysis, while eight completely recovered. Serum from four cases was tested twice, once after recovery and again ten months to one year later. In each instance the results were the same.

In the second series, tests were made on the serums of twenty individuals on the donor list, who had not received serum treatment. Eight (40 per cent) of the group gave positive neutralization. One (5 per cent) gave partial results, while eleven (55 per cent) gave no protection against the virus.

Those giving a positive test had either completely recovered from the disease or had shown a transient paralysis with subsequent recovery. It may be emphasized that, in this group, no positive neutralizations were obtained with serum from badly crippled cases, while the potent serums were mainly from individuals showing the least after-effects.

In considering the results of these two sets of experiments, one is mainly impressed by the lack of neutralizing ability shown by a large percentage of the recovered cases in both groups. It is also seen that there were fewer positive neutralization tests in the group receiving treatment than in the untreated series.

Therefore, while the administration of convalescent serum may not necessarily interfere with the development of antiviral substances, apparently, from these figures, antibodies were less strongly developed in this series when passive transfer occurred. In the second series, the positive neutralization tests were given mostly by serums from individuals that had completely recovered from the disease, while no neutralization occurred in those from the more severe cases.

Shaughnessy, Harmon, and Gordon (1930) also report low figures (42.9 per cent without neutralizing antibodies) in their series of fourteen recovered human cases, while Aycock and Kramer (1930) had negative results in 32.1 per cent of twenty-eight convalescent monkey serums. On the other hand, the latter workers obtained 87.9 per cent positive tests with the serums from forty-one recovered human cases.

Can one reconcile the different conflicting figures given for the tests on convalescent serum, and how should they be interpreted? Should one consider the view of Andrewes, that immunity in filtrable virus disease may be due to a constant reinforcement by repeated unrecognized infection in those constantly exposed to the given virus, or should one believe, with Aycock, that either an early subclinical infection produces a lasting immunity, or that the individual has a certain inherent ability to withstand the disease (autarcesis)? In the latter case an immunity would not necessarily be dependent upon the presence of neutralizing antibodies. If, therefore, immunity is not entirely dependent upon the production of these antiviral substances, just as in certain bacterial infections the presence of particular antibodies (opsonins, agglutinins) does not necessarily affect the course of the disease, one may perhaps correlate the hypothesis of autarcesis given by Aycock with the recent work of Jungeblut and Engle,

on the inhibitory effect of the pituitary extract upon the development of poliomyelitis in young monkeys. Immunity may thus be considered largely a function of the inherent physiological constitution, and one would not necessarily expect a high percentage to show neutralizing substances.

On the other hand, there are several other factors to be considered in regard to these low figures for the convalescent serum:

1. Second attacks of poliomyelitis are rare or almost unknown, so that undoubtedly immunity must be present in recovered cases. If this immunity is not manifested experimentally by the neutralizing ability of the patient's serum, one should not consider it to be entirely absent, but merely not present in sufficient quantity for demonstration by the technic employed. The methods in use for animal experimentation in poliomyelitis are extremely severe, so that there is a probability that many serums may have contained antiviral substances but insufficient to neutralize the potent virus. However, if such serums are used on mild human cases, the effects may be beneficial in spite of the low antibody content.

On the other hand, discouraging results will undoubtedly be obtained if they are given to the more severe cases. If the potent serums belonging to the positive group should be administered, the progress would naturally be favorable for both the mild and the severe forms of the disease.

The discrepancy in the reports on convalescent serum therapy may thus in part be explained, and, if the effect of this treatment depends on the neutralizing ability, the best results can be obtained with human serum only when it is secured from a group of known tested donors who have either recovered from the disease or are so-called "normal" individuals possessing antiviral substances in the blood stream.

- 2. Difference in the technic employed for the neutralization tests may also be the source of one discrepancy. In the present work, every advantage was given to the serum by using larger proportions than of virus, so that undoubtedly true neutralization took place in the positive cases.
- 3. Another factor may also be considered: May not the monkey strain of virus which has gone through many years of animal passage have become so adapted to the monkey host that there has developed a lessened ability to be neutralized by any but the most potent human serums? A recent report by Weyer lends support to this idea, since he has shown that immune horse serum which was highly potent

against the monkey poliomyelitic virus in a dilution of 1 to 500, protected against recently isolated human virus strains only in a dilution of 1 to 20, while neutralization with human convalescent serum occurred only in the same low dilution.

In whatever light the immunity to poliomyelitis may be considered—(1) as a hyper-immunization due to repeated unrecognized infection, which may account for the high percentage of normal immune serums, (2) as due to a single sub-clinical infection, or (3) as due to the presence or absence of a certain inherent physiological condition within the host-it seems quite evident from the results of the neutralization tests in the present small series and from the figures of Shaughnessy, Harmon, and Gordon<sup>6</sup> that serum for treatment of human cases should be obtained from known tested donors rather than from the indiscriminate use of untested material, except perhaps in an emergency. Only in this way can the results be judged in the use of convalescent or immune poliomyelitic serum.

#### SUMMARY

- 1. It has been advocated by different workers that immunity in poliomyelitis may perhaps be due: (1) to the constant reinforcement of repeated unrecognized infections from constant exposure to the disease; (2) to an unrecognized subclinical infection, or, (3) to a certain physiological make-up of the individual. These ideas have been substantiated by the finding of antiviral substances in the blood of a large percentage of normal individuals.
- 2. The use of human convalescent serum has been shown of value in many incidences, but only when given early in the disease, before the onset of paralysis. The value of an early diagnosis is thus clearly shown.
- 3. The results of using convalescent serum therapy in experimental animals, lend support to the intramuscular method of administration, although, as in the case of human beings, there was neither 100 per cent cure for the treated animals nor 100 per cent fatality for the untreated. Residual paralysis was seldom prevented.
- 4. The use of a standardized serum from hyperimmune horses, goats, and sheep has been advocated, but as yet has not been given sufficient trial in the United States to judge its real efficacy.
- 5. Some evidence has been in favor of the use of immune goat or sheep serum in a small group of human cases in the preparalytic stage.
- 6. The immune sheep serum has been found effective experimentally in a dilution of 1 to 200 by

the *in vitro* neutralization test in monkeys, while animal experiments show that it has a certain therapeutic and prophylactic value. It also retains its potency for a period of at least ten months.

- 7. The use of human convalescent serum is rational from the experimental evidence reported, but lacks uniformity of results in practice. That this may be due to differences in the potency of each serum has been demonstrated by testing for antiviral substances in two groups of recovered cases.
- 8. In the group of twenty-two treated cases, only six (27.2 per cent) gave a positive neutralization test, while in the group of twenty untreated individuals, eight (40 per cent) were positive.
- 9. In these groups it was also found that: (1) there were more positive tests among cases showing spontaneous recovery than among those badly crippled; (2) while the treated group gave fewer positive tests than the untreated, (3) there was no real evidence for the passive transfer of antiviral substances; (4) the use of such serums in poliomyelitic therapy should not be discarded unless the *in vitro* neutralization tests are found negative.
- 11. Finally, it seems apparent that, if the effect of serum treatment depends on the neutralizing ability, the best results can be obtained with immune serum only when it is secured from hyperimmunized animals whose serum is standardized, or from a group of known tested donors who have either recovered from the disease or who are tested normal individuals. Although there is no uniformity of opinion as to its efficacy, yet because of the experimental evidence in its favor, the use of convalescent serum therapy should not be abandoned until something more effective has been instituted.

#### REFERENCES

- 1. Aycock, W. L.: Am. Jour. Hyg., 1928, 8, pp. 35-54.
- 2. Ayccck, W. L.; and Luther, E. H.: Jour. Am. Med. Assn., 1928, 91, pp. 387-393.
- 3. Aycock, W. L.: Jour. Prev. Med., 1929, 3, pp. 245-278.
- 4. Aycock, W. L.; and Kramer, S. D.: Jour. Prev. Med., 1930, 4, pp. 201-206.
- 5. Aycock, W. L.; and Kramer, S. D.: Jour. Exper. Med., 1930, 52, pp. 457-464.
  - 6. Brodie, M.: Jour. Bacteriol., 1932, 23, p. 102.
- 7. Faber, H. K.: Jour. Am. Med. Assn., 1931, 96, 935-937.
- 8. Fairbrother, R. W.: Brit. Jour. Exper. Path., 1930, 11, pp. 43-54.
- 9. Fairbrother, R. W.; and Brown: Lancet, 1930, pp. 895-896.
- 10. Howitt, B. F.; Shaw, E. B.; Thelander, H. E.; and Limper, M.: Jour. Am. Med. Assn., 1931, 96, p. 1280.

- 11. Howitt, B. F.: Jour. Infect. Dis., 1932. 50, pp. 47-60.
- 12. Howitt, B. F.: Jour. Infect. Dis., 1932, 50, pp. 26-46.
- 13. Kramer, S. D.; and Aycock, W. L.: Proc. Soc. Exper. Biol. and Med., 1931, 29, pp. 98-99.
- 14. Kramer, S. D.; Aycock, W. L.; Solomon, C. I.; and Thenebe, C. L.: New Eng. Jour. Med., 1932. 206, pp. 432-435.
- 15. Netter, A.: Bull. de l'Acad. de med., Paris, 1915, 74, pp. 403-423.
- 16. Pettit. A.: Compt. rend. Soc. de biol., 1918, 81, pp. 1087-88.
- 17. Rosenow, E. C.: League of Nations Monthly Epidemiological Report, 1930, Nos. 2 and 3, pp. 47-70; 97-113.
- 18. Schultz, E. W.; and Gebhardt, L. P.: Proc. Soc. Exper. Biol. and Med., 1931. 28, pp. 409-411.
- 19. Schultz, E. W.; and Gebhardt, L. P.: Proc. Soc. Exper. Biol. and Med., 1931, 28, p. 412.
- 20. Shaughnessy, H. J.; Harmon, P. H.; and Gordon, F. B.: Jour. Prev. Mcd., 1930, 4. 463-475.
- 21. Shaw, E. B.; and Thelander, H. E.: Jour. Am. Med. Assn.. 1928, 90, pp. 1923-1927.
- 22. Soule, M. H.; and McKinley, E. B.: Proc. Soc. Exper. Biol. and Med., 1931, 29, pp. 168-170
- 23. Stewart, F. W.; and Haselbauer, P.: Jour. Exper. Med., 1928, 48, pp. 449-455.
- 24. Weyer, E. H.; Park. W. H.; and Banzhaf, J.: Jour. Exper. Med., 1931, 53, p. 553.

### THE ARIZONA STATE BOARD OF MEDICAL EXAMINERS AND THE MEDICAL PROFESSION

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(Read before the Forty-First Annual Meeting of the Arizona State Medical Association, held at Globe, Ariz.. April 21-23. 1932.)

I wonder if it is really the custom or rule, or neither, for a secretary of the State Board of Medical Examiners to read a paper on such an occasion as this? To bring before you what I believe to be the salient points of this paper, it will be necessary now and then for me to transgress a bit upon remarks that apply to the profession, and surely not the cults, because, while we are sometimes prone to soft pedal, I am personally giving you my honest and sincere opinions minus any possible egotistical expressions. It is, therefore, essential that your patience in these seemingly indirect statements, be solicited.

It is now one year since I became Secretary of the Arizona State Board of Medical Examiners, and in that time it has been possible for me to familiarize myself with the things that concern this office and those that do not. There is correspondence from

every state in the Union and from foreign countries, having pathetic as well as humorous angles. I have seen pressure brought to bear over my head, and that of the Board, from doctors here in Arizona, so that their desires and wishes may be gratified. For the benefit of those who do not know, all moneys received at my office for examination and reciprocity, are sent to the State Treasurer. We are, like other state departments. budgeted and, therefore, can spend only so much. I should say-so little! I tell you this so that you may know how financially handicapped we are, much as we would like to correct the evils confronting, and to quite an extent affecting, you and me. One former secretary had to close his office; another had to have a special appropriation to complete essential expenses. I also had to close the office for about six weeks previous to the fiscal year beginning July 1, 1931, because of lack of funds.

For the fiscal years of July 1, 1931, and July 1, 1932, the Legislative Examiner was so generous in his economy program that he so arranged the budget that the Secretary's salary be made possible for 24 months, therefore making it impossible to close his office. In the language of the laity-I was made "the goat"; not because I am unable to close my office, but for the reason that such vast correspondence comes in that cannot be handled without a long delay, because the budget for a stenographer for the Secretary of the Board was omitted. This is the first time such an unwarranted procedure was made possible. I should like to see the profession ally themselves more closely and advocate an increase in the Board's budget. I say this, gentlemen, irrespective of the Board's membership makeup. Our budget is so worded that no unused funds may be transferred from one section to another. For example, should a few dollars be left over from traveling expenses, they cannot be used for operating expenses. This is the first time, I believe, that our budget has been so technical, whereas a lump sum was allowed in the

In going over the records of Arizona licentiates, I noticed in the Register the names of two doctors—now practising in Globe—among the first doctors to receive a license to practice medicine; dated May, 1903. Fee \$2.00 for a license. I also noticed the name of one of the guests—Dr. William Duffield of Los Angeles, formerly a member of the first State Board of Medical Examiners.

The A. M. A. 1931 Directory lists the names of 494 doctors in Arizona and the population 435,573. My records show 453 licenses granted in the past ten

years. In the past two years, 108 doctors were given licenses.

Concerning reciprocity, may I ask, "Why should Arizona reciprocate with every state in the Union when not all states reciprocate with Arizona?" The following are the names of the states which do not number Arizona among those with which they reciprocate. At least two states in the Union have no reciprocity whatsoever. May I be bold enough to wish I knew of at least three. I have no selfish motive in that remark, because I believe it would work out ever so much better for all concernedat least for those who had no gold before they came in, and for those who are in and have none. Going back to the states that do not reciprocate, I refer to: Florida, Georgia, Illinois, Idaho, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Mississippi, Nevada, New Jersey, Oregon, New York, North Carolina, North Dakota, Rhode Island, South Carolina, Tennessee, Utah, Virginia, Washington, West Virginia and Wyoming.

Why the Board of Medical Examiners should meet every three months, is beyond me. I think it is twice too often. Twice a year for examinations and the consideration of reciprocity is surely sufficient.

Of vital importance is the status of osteopaths in so far as they concern the doctors of medicine. "Osteopathic physicians and surgeons" is the title given practitioners of these schools. On the coast in at least on hospital, I am told, every third patient is sent to the osteopathic ward where they, the patients, are given all forms of surgical and medical treatment. Today all Grade A medical schools demand at laest two years' pre-medical schooling before entrance. Osteopaths do not have such minimum entrance demands. The very books sold to you and me are sold to them. The very same text books used in our medical schools of today are sold to their schools. These are books written by ethical doctors, I presume. It does not behoove me to elaborate on this matter, other than if you should ask, where does this come in under the topic of this paper? my answer would be-food for thought! May I add, business is business. Osteopaths take our Board!

The annual registration of doctors of medicine is now in vogue in eighteen states, including Alaska, and has for its purpose law enforcement. It would be a great help to us. A small fee of at least one or two dollars a year would help to provide (1) enforcement of the medical practice act, (2) having available a list of the doctors licensed in our state, this list to be sent to the Law Enforcement Department.

House Bill No. 23, known as the Arizona Narcotic Control Act, and passed by the Tenth Legislature in regular session, requires that we doctors register with the State Board of Pharmacy at Phoenix, should we prescribe or deal in narcotics. In defense of the Pharmacy Board, and for your information, they, the Pharmacy Board, had nothing to do with this. I bring this before you so that you may, at your convenience, read this Bill. It is my opinion that the Federal Government should remedy its narcotic evil, and that the dollar we give toward this be used, instead, for registration.

Granting a temporary license. This is one of our bugaboos, and we stay shy of it all we can. If a doctor in a community desires to have another take his place, or if a doctor in any given area wants a doctor in his group, we get an S. O. S. request for a temporary license. The law states that a temporary license can be granted only when emergency exists. Our view and the other fellow's way of looking at it, as to just what constitutes an emergency, present just two opposite views. I think we have granted five temporary licenses in the past twelve months.

I am sorry to say that not a few regular doctors are practising medicine in Arizona without a license. It is no fault of the Board if an application for examination or reciprocity comes into my office within, instead of prior to, the two weeks before a meeting of the Board. There are ever so many irregular practitioners without a license. So if the question were asked me, what is an irregular, I could best answer that by asking, what is a regular?

Basic Science. It is the consensus of opinion of medical boards and members of medical associations that basic science laws have been of inestimable value, as they have been effective in keeping out cultists. Doctors, I am told, should not lobby for legislation during the Session. The public and legislators combined should be educated to our needs, but this requires tact, time, and diplomacy. If each medical society would appoint a committee to interest local business men and organizations in matters that concern the profession, we should accomplish more in the way of legislation.

About ten years ago, there was a gentlemen's agreement, in the matter of reciprocity, between Arizona and Sonora, Mexico. About a year ago the Mexican Federal Government definitely shut out all foreign practitioners. Under their new Federal Code no physician not registered in the Federal District could prescribe narcotics or sign death certificates; and within the past year, I understand, the Federal

Department of Health of Mexico has refused the registration of foreign diplomas. From information which I believe to be reliable, these conditions have proved a hardship on our American doctors. Good legislation on this matter inserted into the Medical Practice Act would help the Board to a more definite procedure.

In conclusion, may I suggest that a questionnaire, so worded as to meet the recommendation of this Association, be sent to each candidate for the next Legislature, and the time to do that is NOW—not THEN!

Last, but not least, the Arizona State Board of Medical Examiners has for its purpose the object of determining who are and who are not eligible to practise medicine in this State, (done, as you know, by either examination or reciprocity) and to have on record the names of those who have been granted licenses. Much as we should like to, we can not correct many problems that come before this Board, because of lack of funds. I have made no attempt to offer a panacea or high pressure salesmanship for your consideration. What concerns our Board, concerns you. Fortifying our Board brings that much better results to you. The greatest saint is not the man who does extraordinary things, but the man who does ordinary things extraordinarily well.

#### DISCUSSION

DR. R. J. STROUD (Tempe): I want to draw your attention to two facts brought out in Dr. Berger's paper: first, that 102 doctors have been granted licenses in the past two years, and the other that five temporary licenses have been actually granted in the past twelve months.

Just what increase of population justifies granting of 102 licenses is a mystery to me, for this is over 20 per cent of the number now practising medicine. We don't die off so quickly that a 25 per cent increase is necessary. Such an admittance of so many doctors will tend to make tramps of most of the medical profession within our borders in the next ten years.

If ever a year came to Arizona when no temporary licenses should have even been applied for, let alone granted, it was this past twleve months. If, as Dr. Berger says, they side step the issuing of such temporary licenses, a good many must have been applied for. What occasion could ever arise in the face of declining populations for the issuing of a temporary license, I cannot imagine. Originally, temporary licenses were given because, during the growth of mining companies, it was hard to get a man quickly and for short periods if some one dropped out or they needed a new man. This privilege has no doubt been abused, is being abused, and will continue to be abused as long as human beings consider only things of the moment.

I think the time has come when a moratorium in Arizona should be made as to new physicians coming in. We are asked in Maricopa County to go out and get information concerning cultists and irregulars who are becoming more active as time goes on, but we advertise the fact that there are not enough doctors to care for the people by adding 102 of us to our rolls in the face of a declining population.

Just so long as you accept more men in Arizona, you are going to see the younger ones take up some specialty and immediately rise above the mass of the population. The medical profession is on trial and the sooner we know it the better. Sometimes we so closely guard our ethical parts that we forget that human beings are only human and not part of a vast machine over which we hold control. In our complacency we let things drift until the last part of the ninth inning and then pray that somebody hits a home run. Like Casey, we generally fail.

As long as Arizona is being so widely advertised to the public and also to the profession, a preponderance of professional men will choose this state to make what they fully believe will be an easier living and to live a happier life. Personally, I should like to see the number of men coming to this state limited to ten a year, with preference given to Arizonabred boys who wish to return to their native state and whose parents are taxpayers. Then population, if it ever should increase again as rapidly as in the past, would have a chance to catch up. This is radical, but no more radical than copper mines and copper-mining towns limiting their population by closing down and putting men out of jobs. It simply has to be done in the mining industry before somebody goes broke, and it will have to be done in this medical activity-unless you want to have an impoverished medical profession. And it can be done if you men will just get together and do it. Certainly no other crowd of people is going to fight your medical battles,-and you seem reluctant to fight your own.

Up until 1905, medical schools of any and all grades turned out hordes of graduates-a great many poorly trained. This was, however, in the face of an enormous increase in population, when we welcomed any and all from other countries. Then medical schools began to advance, and the poorer ones dropped out, and a little lull took place; but now the medical schools are loaded to capacity and turning out doctors faster than any other country in the world, and that in face of an almost stationary population. We have three times as many doctors per population as Great Britain, France, or Germany, and four times as many as Sweden. But our graduates are high-toned and flock only to cities, leaving country places alone. Just why Arizona should continue to be the Mecca of this enormous number of graduates, where our medical population has increased by 25 per cent when the general population is decreasing, is hard to say. But the remedy is in your hands if you care to use it. It seems that the majority of doctors who start clinics or groups go outside of the state for their associates, who, of course, add to the general medical populace. It has come to be almost a racket. Just how these men justify themselves when complaining about the cults, is hard to see. For the public likes to have a fellow rub shoulders with him a little bit, whether he is orthodox or not. Let us just introspect a little and keep our skirts clean before we try to throw stones at the other fellow. As Dr. Berger says, "Who is a regular?" The simple question is, "Does the medical profession in Arizona desire to declare a moratorium?"

DR. C. E. YOUNT (Prescott): It seems to me that we have not been on our job in securing memberships to the State Association. We have two hundred and eighty-five members, and there are about two hundred more doctors who should belong to the State Association.

DR. W. W. WILKINSON (Phoenix): Three weeks ago Dr. Clark L. Abbott of Oakland, and a member of the California Board of Medical Examiners, said to several of us who were lunching at the Maricopa County Medical Library that the way for Arizona to get a Basic Science Bill passed was to initiate it and not depend on the State Legislature.

DR. H. P. MILLS (Phoenix): I want to ask about the possibility of starting action to handle the finances of the Board of Medical Examiners. If it is left to the legislators to prepare the budget, the apportionment will be small. If the Board can receive the fees collected, these monies will furnish sufficient funds to carry on the work of the Medical Examiners, including a salary for the Secretary, providing for a stenographer, for expenses of Board members in attending meetings, and providing sufficient funds to secure legal advice as needed.

### HAY-FEVER, ASTHMA AND TUBERCULOSIS

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(Presented at the Staff Meeting of St. Mary's Hospital, Tucson, May 13, 1932.)

Literature does not abound with discussions of these subjects and their relation to each other. Physicians of the Southwest see so many of these cases that a discussion of them is always timely. As we know, the climate of southern Arizona attracts asthmatic and tuberculous patients from all over the country. Hay-fever is an important local problem for an entirely different reason. It is conservatively estimated that 10 per cent of the population of Tucson has seasonal hay-fever in some degree. There are several factors entering into the cause of this

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fact. First, the long warm season favors a long-continued growth of many wind pollinating plants. These plants begin to pollinate early in the year and some of them continue to throw off pollen until late in the winter; hence, we have many months in which the air is well filled with pollen. The dryness of the air facilitates a high pollen content of the atmosphere in two ways. First, there is little rain to wash the pollen granules out of the air; the pollen is light and buoyant and floats readily in the dry air. Second, there is often more pollen liberated by plants due to the long so-called droughts; if the plant is about to perish because of lack of water, nature makes it pollinate in an effort to perpetuate itself before the parent plant dies. On the desert there are few grasses that make attractive lawns. One has been importd which does well when sufficiently irrigated; it begins to grow in early spring and lasts until late fall. It is quite hardy, and, therefore, most of the lawns are made up of it. This grass, Bermuda, is a profuse pollinator and is pollinated by wind; furthermore, it bears pollen practically all its growing season, and, therefore, a high content of Bermuda pollen is in the air for a long time. The winds of this area also are a factor, the pollen is light and buoyant and there is no way of telling how far it may be carried by some of our winds. We do know, however, it is as much as 5,000 feet above the earth, so it may travel laterally for many miles in some of our wind storms. From the foregoing, it is apparent that there are many factors conducive to a high pollen content of our atmosphere for many months of a year. Then, given a person with any, even slight, tendency towards hypersensitiveness, with the excessive exposure to many potential offenders, he is likely to develop syymptoms before he has been in this climate many seasons.

Having established the fact that we have, in our midst, many sufferers from hay-fever, asthma, and tuberculosis, it is now pertinent to ask what, if any, relation exists among these diseases. The relation of hay-fever to asthma is too well recognized to warrant further discussion here. Suffice it to say that 35 per cent of untreated hay-fever patients develop asthma at some time in their lives.

Before entering upon this discussion let us agree on what we mean by asthma. It is a term loosely used to designate any dyspnea associated with prolonged expiration, wheezy respirations, emphysema, and so forth. This undoubtedly is a suitable definition for asthmatic breathing, but unfortunately the description fits several unrelated clinical conditions which simulate each other in the nature of their respira-

tory paroxysms, but are totally different in etiology and in therapeutic indications. It fails to differentiate cardiac, renal, thymic and other so-called asthmas from the more common and typical form of spasmodic dyspnea generally recognized as bronchial asthma. Coca and his co-workers have coined the term "atopy" to designate those clinical forms of hypersensitiveness in man which are hereditary in nature. In considering bronchial asthma as that form of asthma which is subject to the atopic influence, one automatically segregates it from the socalled thymic, renal, and cardiac asthmas, as well as those forms of chronic bronchitis and emphysema which symptomatically simulate bronchial asthma. Hence, we arrive at Walzer's definition: "Bronchial asthma may be defined as that form of atopic illness which manifests itself in recurrent attacks of paroxysmal dyspnea, particularly pronounced in its expiratory phase." It is to this true bronchial asthma that I refer in this discussion, unless otherwise specified. With this understanding of the meaning of asthma we are now ready to see what relation, if any, it bears to pulmonary tuberculosis.

First, how often are these two conditions found together? Schroder, among 4,716 cases of tuberculosis, found only thirty who had asthma (0.7 per cent). On the other hand, Rackemann, among 1,074 asthmatics, found thirteen cases of tuberculosis (1.2 per cent) and Kleivitz noted eight among 423 cases (1.9 per cent). Harkavy and Hebald had proved tuberculosis in forty of 400 asthmatics. In our own series of tuberculous patients admitted to the Southern Pacific Sanatorium, where theoretically only patients with tuberculosis are admitted, there have been 149 admissions; one of these had only bronchial asthma and no clinical tuberculosis; of the remaining, there have been three with bronchial asthma (2 per cent). Thus, we see that, although percentages vary, the two conditions do coexist, contrary to the once popular belief that these two conditions could not coexist, and that the presence of one precluded the presence or development of the other.

It is somewhat generally conceded that there are certain types of pulmonary tuberculosis often associated with asthmatic respirations. I refer here to the old fibrotic type, which occurs usually in elderly persons, is often of long standing, very slowly progressive, and forms scar tissue almost as rapidly as destruction of tissue occurs. It often involves considerable area of pulmonary space, and has a compensatory emphysema in uninvolved areas, especially at bases, accompanying it, and also a secondary chronic bronchitis, not infrequently. It is by virtue

of its extensive involvement, loss of elasticity of lung tissue, complicating emphysema and bronchitis, and probably some secondary myocardial changes, that a dyspnea which simulates asthmatic breathing results, but this does not fulfill our requirements as given in our definition, and it is not this syndrome that we are interested in. There has been much written about the tuberculous infection being an important etiological factor in the production of asthma; many of the writers presume that sensitivity to the protein of the tubercle bacillus is responsible for the asthma. There are no definite data to justify such an assumption. Furthermore, the enlarged hilum nodes in tuberculosis have been considered important in the causation of asthma. This not only has never been proved, but there are some observers who contend there is a definite antagonism between these two pathological processes; however, this is also without proof.

Harkavy and Hebald attempted to work out the relation between asthma and tuberculosis. They studied 400 cases of asthma and found forty cases with clinical and x-ray evidence of tuberculosis. Eighteen of these cases were studied from an allergic standpoint: they were given skin tests with various proteins and also used passive transfer of Prausnitz and Kutsner for atopic reagins in their serum. Nine of the eighteen studied were found to be hypersensitive to proteins of the inhalant group, and their asthma was relieved by removal of the offenders. The conclusion, therefore, seemed reasonably justified that foreign proteins of the inhalant group, and not the tubercle bacillus protein, were responsible for the asthma in this group. Of the remaining nine nonsensitive cases, all gave evidence of having foci of infection, six having chronic sinusitis, two bronchiectasis, one a chronic non-specific infection in lower lobe of lung. Their symptoms were no different from similar cases that had the same type of asthma and infectious bronchitis without tuberculosis; therefore, the asthma was assumed to be due to the complicating respiratory infection and not to the tubercle bacillus. From all data at hand, the consensus of opinioin is that atopic bronchial asthma may complicate or may be aggravated by pulmonary tuberculosis, but there appears to be no evidence that the tuberculosis plays any part in the production of the asthma, and there is no proved allergic manifestation in the form of bronchial asthma due to the protein of the tubercle bacillus.

Now, conversely, the question whether asthma predisposes to tuberculosis is to be considered. Our evidence to answer this question is mostly presumptive. Literature relative to asthma's being an etiological factor in tuberculosis is not profuse. The statistics previously quoted in this paper show that the two diseases are associated with each other only rarely, and this fact in itself shows that asthma plays no important role in the causation of phthisis; for, as many asthmatics as there are, if it predisposed to tuberculosis frequently, tuberculosis would be observed far more often than it is in asthmatics. Apparently, if there is any predisposition in an asthmatic to tuberculosis it is a non-specific effect in lowering general resistance so that a dormant or new tuberculous infection may become active, and the victim's resistance is so low that he is unable to overcome infection that would otherwise be conquered without the patient's being aware of its presence.

Finally, we feel that hay-fever and asthma are very definitely related and associated, and one leads to the other. Furthermore, we feel that asthma and tuberculosis are not related in any way, neither one causing, nor predisposing to, the other, and that when they are found in the same patient it is only a coincidence.

# CASE REPORTS MAȘONIC HOSPITAL

El Paso, Texas, April 14, 1932.

Case History: No. 13867. Coronary Obstruction Acute and Cardiac Infarct. Presented by DR. G. WERLEY, April 14, 1932.

This patient was an American male, aged 46, married, with five children living and well. He had the usual diseases of childhood. Yellow fever during the Spanish American war in Philippine Islands. Two years ago he had an attack of acute indigestion; was in bed for one week and it was six weeks before he was able to work again. History of hives ever since childhood; some on his back at the present time

Present attack began on the fifth of March. He complained of pain in his chest, that went down both arms. He consulted a doctor immediately, going down to the doctor's office. I was called to see him. He was very pale, covered with cold sweat; his voice was feeble. He was restless, moving back and forth, trying to get easy. He was almost pulseless. Heart sounds were feeble; they could hardly be heard at the apex or any place else. He was suffering intensely and we were convinced that he had suffered a cardiac infarct. He was taken home in an ambulance. Two nurses were placed on the case at once. His temperature went up almost immediately and pulse ranged from 110 to 120, and at times from 140 to 150, respirations from twenty up to forty-five. Temperature varied from 100° to 102° and even higher at times. The pain required morphine for relief. Patient was cyanotic and dyspneic. Liver began to swell. Heart was very much dilated and heart sounds remained very feeble, almost inaudible. He had great difficulty in breathing, so that, at the end of two days, I felt very doubtful about his recovery and the question of oxygen came up. Patient was brought to the hospital and placed in the oxygen tent. He did not get a great deal of comfort out of it at first, but after a while he seemed to get considerable comfort and called for it when it was removed. I could not see that he received any beneficial effect from the oxygen. A few days later a friction rub was heard over the heart, which became very marked and continued off and on until his death. (It did disappear for a few days but came on again three days before death.) He also developed a pleuritic rub on the left side adjacent to the heart. This pleuritic rub also continued until his death. His temperature never did go down. The heart sounds, after three or four days, became very much stronger and the liver was not so easily palpated. He never did come back as these cases generally do, and he became delirious and had involuntary movements and became quite unmanageable at times. He was given stimulants, respiratory caffeine sodium benzoate. Direct heart stimulants are not indicated in such cases. Electrocardiographs in these cases are of tremendous help and are positive in 70 to 80 per cent of these cases of infarct.

This patient left the hospital in an improved condition but died at home a few days later.

History No. 13726. Coronary Occlusion. Presented by DR. T. J. McCAMANT.

Patient is a well developed white male, aged 60. Family and past history not obtained. He was admitted to the Masonic Hospital February 3, 1932, 9:20 p. m. Expired February 3, 1932, 11:55 p. m.

Patient had been drinking and eating in an adjoining community. He had had two cocktails and a stein of beer with a heavy rich dinner which was hurriedly devoured, after which he had to rush to catch the train. He became nauseated in the taxi while going from dinner to the depot. Pain was severe, extending down both arms. He had difficulty in breathing, said he was not accustomed to drinking and gave no history of ever having had this trouble before. I was called to the station about 9 p. m. to see a patient whom the officials thought too sick to make the trip. When I arrived, I found the patient lying on a couch in a compartment. He looked sick, with ashen color, and was bathed in cold clammy perspiration. He was perfectly rational, said that he felt much better since he vomited and believed that he could make the trip. The heart sounds were distant and there appeared to be a missing ventricular contraction. I gave him 1/50 gr. of nitroglycerin and advised him not to make the trip, but to remain here and go to a hospital for the night and, if he should be able, he could resume his trip the next day. Patient consented to this and an ambulance was called by the train officials. I hastened to the Masonic Hospital to

make preparations for his arrival. The bed was prepared and heat placed in it. With the aid of the ambulance driver, the floor nurse and I removed his clothing and placed him in bed with no exertion on his part. Heat was applied externally and I gave him ¼ gr. of morphine hypodermically. Respirations in a few minutes were much easier, nausea was gone, and patient stated that he felt much better. He gave me his brother's address and requested that, if anything should happen to him, his brother should be notified. Said that he had what the doctor in California told him was acute indigestion that lasted three or four hours. He complained of having a distressed feeling in the stomach and a dose of bisodol was given. A special nurse was placed on the case and I remained until he was fairly comfortable. I told the nurse to give him morphine to keep him comfortable, to see that he did not exert himself one bit, to give him his medication and liquids through a drinking tube, and to notify me if his condition changed. I was called about 11:40 p. m. and was told that my patient was in a bad way and, when I reached the hospital, he had expired.

Autopsy Findings (by Dr. George Turner):

The body is that of a man about 63 years of age. It is about 69 inches tall and weighs about 200 pounds. He was rather fat and well nourished.

The pleural, pericardial and abdominal cavities contain no excess fluid, except the pericardial cavity. This cavity contains about 10 cc. of light yellow, clear fluid. There are no pleural adhesions.

Inspection of the viscera shows the lungs to be normal. There are several ecchymotic areas over the left ventricle of the heart. The liver shows a passive congestion in that it is slightly enlarged, has a deep reddish-brown color, and its margin is rounded. The gallbladder appears normal and contains no stones. The stomach and intestine appear normal. The stomach contains about 350 cc. of partly digested food. The gastric wall and mucosa are normal. The appendix is long, slender, and fibrous from an obliterative type of fibrous infiltration. The tip is adherent to the omentum. Aside from slight anthracosis and moderate passive congestion, the lungs are normal. The left heart muscle is anemic with areas of petechial hemorrhages apparent on the surface. Both coronary arteries show advanced fibrous and calcific infiltration of their walls. This condition is more dense on the left side. At a point in the left coronary, 2 cm. from its orifice, the lumen is reduced to 2 mm. in diameter. The right coronary is occluded by a thrombus about 3 cm. from its orifice. Aside from passive congestion, the liver presents small scars here and there over its surface. These are old and not of immediate concern. Both kidneys present the same picture. They are irregular and lobulated. The capsule peels easily from each. The kidney structure is of a deep reddish-brown color. The glomerulae are prominent. Examination of the gastric contents reveals no evidence of harmful poison.

Diagnosis: Coronary occlusion.

Case Histories No. 13747 and No. 13894, presented by DR. F. P. MILLER (Dr. Liddell's Case).

Cholecystitis and cholelithiasis, first admission: (1) Partial obstruction intestinal; (2) adhesions intestinal; (3) peritonitis, second admission.

Family History: Father died at the age of 66, of yellow fever. Mother living and well, aged 67. Two brothers living and well; three sisters living and well. One sister died of influenza; one sister died of gallstones. No tuberculosis, cancer or mental diseases in the family.

Past History: Whooping cough and chickenpox as a child. Measles at 18. Mumps at 25. Eczema as a baby. Menstrual history has been normal and regular up until last September. Some irregularity since. Has been pregnant four times. Two children living and well, ages 10 and 6. First pregnancy twins, weights 10 and 7 lbs. Forceps delivery; one died at birth. Patient was ill for about a month following delivery. Severe lacerations at that time. Two miccarriages at two months, causes unknown. Patient has always been constipated, requiring laxatives almost daily. Has lost about thirteen pounds in weight the past two months.

Present Illness: Patient states that when she was 25 years of age she had "stomach trouble," i.e., she was distressed with gas, upper abdominal pain, nausea, and vomiting. These attacks usually came on after eating. This condition persisted for about four years. She was somewhat better up until a year ago when the symptoms again returned and grew in severity. About three months ago, patient began to have attacks of pain that started in her right upper abdomen just below the rbis and radiated across to the back and right shoulder blade. These attacks always came on after meals. Greasy or heavy foods are more apt to bring on the attacks. She has had several real severe attacks during the past three months, accompanied with nausea, no vomiting. No fever as far as patient knows. No jaundice noted. . X-ray of gallbladder before entrance to the hospital revealed no stones. Has not required morphine for relief of pain.

A cholecystectomy was done. The galbladder was found to be distended and it was filled with mediumsized stones. Patient's postoperative condition seemed good. Maximum postoperative temperature 101.6°. Her wound drained freely. She left the hospital on the fifteenth postoperative day, apparently in good condition. Temperature 98.4°. The evening before she left the hospital, she vomited once.

A month later she returned to the hospital with the following history: Since leaving the hospital patient has had frequent attacks of vomiting, always vomiting the previous day's food. Distention of the abdomen at first present at times, but the past few days the distention has been present all the time. Enemas do not give complete relief. She complains of pain in the lower abdomen, more pronounced on the left side. She has been extremely constiputed. She was sent to the hospital for observation.

X-ray of the gastro-intestinal tract: Fluoroscopic and film of abdominal area show approximately 75

per cent retention of barium in the stomach at 6 hours, with the advance column high in the upper coils of the ileum. No barium is seen in the lower coils. The duodenal cap was dilated, with some apparent adhesions at the junction of the first and second portions. These adhesions are not producing any marked obstruction. Conclusion: The failure of the barium to pass into the lower coils of the i'eum would be suggestive of an incomplete or partial obstruction of the small intestine in the region of the upper coils of the ileum.

White blood count showed 9,300 white cells; large mononuclears, 4 per cent; small mononuclears 13 per cent; polymorphonuclear neutrophiles 78 uer cent; transitionals 5 per cent.

Vomiting and distention gradually increased. Patient was given glucose and soda intravenuosly twice a day. She was operated on nine days following her entrance to the hospital. Many adhesions and free fluid were encountered. The colon was adherent along the line of the old incision and around the region of the gallbladder, liver, and pyloric end of the stomach. The small intestine was also adherent in numerous places, having the appearance of plastic peritonitis more or less confined to the upper part of the jejunum and duodenum. Another adhesion was encountered, of the peritoneum and jejunum, on the left side opposite the anterior superior spine of the ileum. Large amount of fluid was encountered in both the greater and lesser peritoneal sacs. The adhesions were separated and a gastroenterostomy was done. Patient's condition following operation was serious. Patient expired thirteen hours after her operation.

# CASE OF ABDOMINAL PAIN (Diagnostic Discussions)

W. WARNER WATKINS, M. D. HOWELL RANDOLPH, M. D. D. R. GASKINS, M. D. ORVILLE H. BROWN, M. D. J. D. HAMER, M. D. H. D. KETCHERSIDE, M. D. Phoenix, Arizona

(Case No. 12051, Case Records of Massachusetts General Hospital, from Boston M. & S. Jour., Feb. 4, 1926, page 207.)

#### Case Record

An American carpenter seventy-five years old entered November 12 complaining of pain in the abdomen and the small of the back. He had always been subject to sick headaches. For eight years he had lived alone and cooked his own meals. For some years he had had a moderate degree of constipation. Recently he had urinated at night. He had worked at his trade until a slack season, five months before admission.

AUGUST, 1932

Since the middle of the summer he had been losing appetite and weight. August 19 he got up and fell unconscious. After this he had almost continuous pain in the stomach. He often felt as if vomiting would relieve this, but could not vomit. He lost appetite until he could hardly force himself to eat. Nine days before admission he vomited a little bitter yellow fluid. A week before admission he began to have some pain in the small of the back, more on the right, and three days before admission pain in the chest with cough and blood-streaked sputum. He weighed 145 pounds the middle of August, 120 the middle of September, when he "gave up." During the illness the urine had been scanty, but there had been no pain or burning.

Examination showed an emaciated, dehydrated old man, acutely ill, with flushed cheeks and foul breath. Mentally he was somewhat irresponsible. The scelerae were icetric. The teeth were broken and decayed roots. There was marked pyorrhea. The gums were spongy and bled easily. The tongue was dry and furred. There was a hard firm suprac'avicu'ar gland measuring two cm. The lungs showed dullness at both bases and in the right axi'la and patchy dullness under the left scapula. The lower portions of both lungs were filled with moist sticky and crepitant rales, heard also in both lower axillae. There were diminished voice and breath sounds at the right base. The heart sounds were faint. The action was rapid. Electrocardiogram showed sino-auricular tachycardia, rate 125. The blood pressure was 135/75. The arteries were palpable and tortuous. In the epigastrium just above the umbilicus was a hard firm irregular mass 9 cm. in diameter. There was slight epigastric spasm. In the right flank and costovertebral angle was a soft mass with marked tenderness. The liver seemed to be enlarged, but the edge could not be felt, as the mass masked the middle lobe. The testes were large, not tender. The epididymis felt nodulra. The rest of the examination, including the rectal examination, was negative.

The temperature was normal, with a rise to 102.5° the day before death. The pulse was 108-140, with a terminal rise to 180. The respiration was not remarkable. The urine was dark or dark red at all of three examinations, the slightest possible trace of albumin at two, questionable at the third, bile at the first, a few to a moderate number of leukocytes at all, a few to rare red blood corpuscles at two. The blood showed 14,750 to 26,840 leukocytes, 84 to 86 per cent polynuclears, reds normal except for some rouleau formation in one of two smears; platelets slightly reduced in numbers. A Wassermann was negative. The non-protein nitrogen was 47 mgm. per 100 c.c. The stools were clay colored at all of three examinations, guaiac positive at all; no macroscopic blood; fats present once. X-ray showed rather coarse diffuse mottling throughout both lungs, rather more marked at the right base. The examination was unsatisfactory on account of motion.

The orders were for bed with low head rest, forced fluids, liquid diet with one or two ounces of

whiskey daily, morphia gr. 1/6 s.c. daily. November 14 digifolin gr. vi was given intramuscularly, and an order for digitalis gr. iss t.i.d.

The patient showed marked improvement as to dehydration, but otherwise failed gradually from admission. The second night he was somewhat delirious. Early in the morning November 17 he died.

#### W. Warner Watkins, M. D.

It is one of Cabot's maxims, probably repeated in his discussion of this case, that when confronted with the death of a man over seventy years of age, the cause of death will fall in one of four groups in ninety per cent of the cases:

- 1. Cardio-vascular crises, including arteriosclerotic lesions of brain and kidney, coronary disease and angina.
  - Malignancy.
  - 3. Urinary infections from prostate disease.
- 4. Terminal infections, such as pneumonia and sepsis.

While he had an arteriosclerosis, with evidences referable to heart, kidneys and brain, the symptoms were slight and we have no good support for a diagnosis of death from vascular lesion.

For urinary infection from prostatic disease we have no good evidence. Rectal examination of the prostate was negative, and while he had urinary frequency and some abnormal findings in the urine, they are better explained by arteriosclerotic nephritis, not sufficient to cause death, than by local lesions in the prostate. In passing up prostatic cancer, we do not forget that the primary lesion in the prostate may be very small and insignificant, and the patient die from metastases to liver and lungs.

For terminal infection we have some support; pain in the back, physical signs of lung lesions, cough, bloody sputum, x-ray shadows, dyspnea, leukocytosis. Although the general picture suggests infection, we are told the temperature was normal and respirations not increased; pulse was fast but there was a sino-auricular tachycardia.

The evidence is better for malignancy than anything else. Loss of weight, strength and appetite, pain in stomach, nausea, tumor in upper abdomen, clay colored stools, positive guaiac test. We think an x-ray examination of the stomach would have shown malignancy, and make diagnosis of cancer in upper abdomen, preferably primary in the pylorus, with metastases to liver and lower right lung, complicated in the last few days of life by a diffuse broncho-pneumonia.

#### Howell Randolph, M. D.

There are a number of possible findings in this case which, when not mentioned, we assume were negative, and turn to the outstanding definite finding of a large rounded mass in the epigastrium, just above the umbilicus and a soft mass in the right upper quadrant. Because they say it was a soft mass I feel much less sure that it actually is a mass than in the case of the definite one above the

umbilicus. There was no subsequent mention of this mass in the progress notes, and no operation was done so we must either assume that the case was considered inoperable because of its advanced stage, or that they did not find the mass on subsequent examinations. Assuming that there was a mass it is strange that some surgeon did not allow his curiosity to corroborate his judgment and take a look at the mass. I am saying that there was a malignant tumor mass in the most difficult position in the entire abdomen to make a differential diagnosis. Tumor of the stomach, colon, liver, spleen, or pancreas, of very considerable size, might not be differentiated without more definite localizing signs than we have here. Without more vomiting, there cannot be much obstruction to the G. I. tract. In the absence of febrile reaction an inflammatory mass is unlikely, in spite of the marked leukocytosis. Phagophobia probably accounts for the loss of weight together with toxic action of the malignancy. Cancer of liver, colon, or stomach could, any one of them, be responsible for the abdominal findings. Because of the evidence of metastasis to the lungs, rales, and diffuse mottling, and the supraclavicular lymph node measuring two centimeters, I think we can eliminate carcinoma of the colon as it rarely metastasizes. Because the hard mass is slightly more central and distal than the liver, I believe we have a primary carcinoma of the stomach probably metastasizing to liver as well as lungs.

Sino-auricular tachycardia means simply tachycardia controlled by the normal pace maker of the heart, the sino-auricular node. There is no evidence of cardiac disease other than thickening and tortuosity of the arteries and faint heart sounds. These two findings in the absence of any other signs can very well be taken to mean a long standing hypertensive heart case in whom the heart is failing, in which case the blood pressure might not be elevated at the time of examination. Blood cells in the urine might be of more significance if there had been a history of hematuria, but I take it to mean only arteriosclerotic kidneys.

Diagnesis: Malignancy. Carcinoma of the liver and stomach probably primary in the stomach but involving the liver to an extent that the bile ducts are obstructed, causing a cholangeitis. Arteriosclerosis. Terminal bronchopneumonia.

#### D. R. Gaskins, M. D.

As this man presents himself we are confronted with a past history of sick headaches and a slight degree of constipation for the past number of years. The most predominant symptoms of which he complains at this time is pain in the stomach and loss of appetite with a duration of a few months. He has lost considerable weight but he also states that he has eaten practically nothing during this time. With this marked loss of weight and at this man's age we at once think of a malignancy, but his blood picture is rather against this. His leukocytosis and sepsis suggest a pathology with a formation of pus

which has a reflex stomach syndrome. With his past history of constipation, headache and his present history of pain in his stomach and clay-colored tools, I am looking to the gall-bladder for a diagnosis. Statistics taken from the postmortem records of American and European hospitals indicate that from 3 to 10 per cent of all patients have gall-stones. Suppurative inflammation of the bile-ducts is usually a sequel of cholelithiasis or obstruction of the ducts by tumors, damage to the biliary tract and stagnation of bile, favoring pyogenic infection. Occasionally, the disease follows a general infectious process, such as pneumonia, influenza or typhoid fever.

The most constant phenomena are a smooth uniform enlargement of the liver increasing as the disease progresses, and the usual phenomena of septic infection, fever, chills, sweats, leukocytosis and rapid loss of flesh and strength. Jaundice is usually present and may be marked, but it often depends more on the antecedent disease than on the cholangeitis itself. Pain in the hepatic region, variable in degree, is observed in the majority of cases.

Diagnosis: Suppurative cholangeitis with infarcts of the lungs.

#### Orville H. Brown, M. D.

A male, 75, with outstanding symptom of pain in abdomen and later in chest, with cough and bloody sputum, and the salient examination findings of mass in abdomen, enlarged liver, enlarged cervical node, diffuse mottling throughout lungs, cerebral disturbance, must have malignancy of abdominal viscera and metastases to liver, lungs, lymph nodes and probably brain.

The epigastric mass would seem to be primary. This conclusion need not be correct. We have in the hospital a case with a mass similar to that described in this case. An exploration revealed metastases throughout the retro-peritoneal lymph nodes. Hence the primary growth may have been at another place, for example, in the prostate. The rectal examination was negative. The nodular epididymis does not cause me to think of it as the scurce. Pain was also in the right small of the back, where a soft mass with marked tenderness existed. The epigastric mass, hard and nodular, is strongly suggestive of malignancy. The lateral mass was neither hard nor nodular; therefore, the suggestion is that it was cystic. It was extremely tender; this indicates inflamnation. The chronology of events were: He had long suffered from sick headaches. This was probably in no way connected with his acute illness. Sick headaches, I believe, are a type of food sensitization. His chronic constipation is probably of no significance. He lost more than 25 pounds in five months. August 19, he fell unconscious. This may mean nothing more than weakness or pain, or both; after this he had ever present epigastric pain, nausea and loss of appetite. Nov. 5, he developed pain in the small of the back, chiefly right. Nov. 9, he developed chest pain, blood streaked sputum and cough. The location of epigastric growth suggests a cancer of the duodenum or of the head of the pancreas. History does not suggest duodenal ulcer. The pain since Aug. 19 may indicate pancreatic disturbance. Absent bile in three stool examinations proves biliary duct blockage. The sclerae were icteric. This might occur in either a duodenal or head-of-pancreas cancer. Pancreatic cancer grows into the biliary ducts and also into the pancreas ducts. The dammed up pancreatic secretion would cause a cyst of pancreatic fluid and rupture of the pancreatic capsule. The mass in the right side was probably a pancreatic fluid cyst in the region of the right kidney. Some of the fluid probably burrowed also toward the left kidney.

The mental condition of the patient may have been due to brain metastases or to his advanced grade of arteriosclerosis, toxemia and suffering.

Diagnosis: Cancer of head of pancreas with growth into pancreatic and biliary ducts. Pancreatic fluid cyst. Burrowing of pancreatic fluid retroperitoneally to right and left. Right peri-renal pancreatic fluid cyst. Metastases of cancer to liver, lungs and lymph nodes and perhaps brain. Arteriosclerosis. Poor condition of teeth and pyorrhea.

#### J. D. Hamer, M. D.

A man of this age, with the history and findings as given in this case, and running a down hill course in the length of time that he did, is very likely to have malignancy, and the question in my mind is to try and locate the primary source of his trouble. Assuming that the tumor mass in the epigastrium is a malignancy, is it in the stomach, the bowel, the biliary system or the pancreas primarily? I do not believe that the mass is primarily associated with the common duct, the bile ducts or the liver, for we have not sufficient evidence so far as symptoms go, to attach the mass to these organs. The patient should be more deeply jaundiced, and unless it was connected to the common duct, the liver should be more easily palpated, perhaps nodular. If the mass was in the common duct, we would expect a distended gall-bladder and deep jaundice.

The patient had symptoms of indigestion. He could get any and all of his symptoms from any of the above mentioned localities for tumor formation. However, two symptoms in support of stomach cancer are lacking, and that is emesis (especially with cancer of the pylorus), and hematemesis. I do not believe that the mass was primarily in the duodeneum. They are too rare in this locality primarily, although the duodenum may be involved secondarily, especially from pancreatic malignancy. Cancer in and about the ampulla of Vater does occur, and in the pancreas, in such a way as to produce an obstructive jaundice. Ascites and edema of the lower extremities are likely to occur in biliary malignancy, and in gastric tumor with metastasis to the liver. The fatty stools as found on one examination would be in favor of pancreas disease.

From the location of the tumor mass, and absence of sufficient findings to attach this mass to the

stomach, duodenum or biliary system, I believe this was a cancer of the pancreas, the location of which was in such position that it did not completely occlude the distal extremities of the ducts and the ampulla of Vater to cause complete biliary obstruction. Such location for a tumor mass is possible.

I do not believe the epididymis was the seat of the tumor mass primarily. If it were, we would expect metastasis to the liver, and not stomach or pancreas, and I can't feel that in this case we are dealing with liver carcinoma, at least to any degree of severity. However, if this is a malignancy of the pancreas, and as such, death resulted, we would expect to find metastases. Most of them do metastasize. So, for that reason, there are probably metastatic nodules in the lungs, in the adjacent lymph structures, and since there is no other explanation for the pain in the back, I will assume that he has metastases into the spine also. There is also, in the lungs, passive congestion, and probably, with the terminal rise in temperature, a hypostatic pneumonia, metastatic growth in the suproclavicular gland, atheroma of the blood vessels, pyorrhea and dental caries.

#### H. D. Ketcherside, M. D.

In a man 75 years of age a mass in the abdomen is very strong evidence of malignancy and when to this you add loss of weight and failing strength over a period of five months, with painless jaundice, clay colored stools and digestive disturbances, the evidence is almost conclusive.

One week before admission he began to have pain in his back and three days before admission he began to have pain in the chest, cough and blood streaked sputum. On admission the lower portions of both lungs were filled with moist sticky and crepitant rales. The x-ray showed rather coarse diffuse mottling throughout both lungs. Is this the picture of metastatic malignancy of the lungs? No, you would expect a diffuse infiltration with effusion in the pleura, but not so much moisture in the lungs. Further, he only lived eight days after the onset of these symptoms, which is rather rapid for death from metastatic malignancy. He may have had metastases in the lungs but I believe his death was due to bronchopneumonia.

If he had a malignancy, where was the primary growth? Our first thought would be the stomach, since a hard nodular growth was found in the epigastrium just above the umbilicus and he gave a history of gastric disturbance, nausea. He evidently had metastases to the liver since the liver was enlarged and he had jaundice, with clay colored stools. Gastric carcnioma metastasizes early to the liver. But how are we going to account for the mass in the right flank and costovertebral angle. From the location I believe this must have been an enlarged kidney. If the mass is an enlarged kidney due to pyonephrosis or hydronephrosis, we would expect more urinary symptoms than this case presented. Metastases in the kidney from a gastric carcinoma are, I believe, rather rare. This man died before any gastric or kidney examination could be made, so that any statement about the origin of the growth will be a guess, but I am going to state that I believe the growth was a hypernephroma with metastases to liver, mesen eric glands, and possibly the lungs and heart, with death from bronchopneumenia.

#### Summary of Discussion by Dr. Cabot

The dehydration which is commented on in the beginning and at the end seems to me to have some bearing on the diagnosis. We get that drying out very much in cancer of the pylorus. We get it nearly as much in cancer of the pancreas with jaundice coming from that, but I do not remember having seen it in miliary tuberculosis. The natural snap diagnosis of anybody here would be cancer of the stomach with metastases to the liver and lungs. I think the main thing is to see what reasons there are for doubting that natural snap diagnosis.

In the first place, taking the suggestions of the x-ray plate, can it be miliary tuberculosis? He has normal temperature for four days. That is in my experience very rare with miliary tuberculosis. He is seventy-five years old, and has had nothing that can think of in his history or physical examination that indicates a focus from which a miliary process could have started. He begins with well marked gastro-intestinal symptoms and not with fever, which would not be according to my memory of miliary tuberculosis. I think we can exclude it, and if it is excluded I do not know anything else to say of those lung fields except small multiple metastases of malignant disease.

Now as to the site of the primary process it seems to me all the indications we have point to the stomach, but we have neither any chemistry nor any x-ray of the stomach. Probably quite rightly those were not attempted. Where else could it be? Of course it is always possible to have a cancer start in the omentum. That generally gives us a mass and a pretty early ascites but not so much gastric disturbance. If his cancer was primary in the bile ducts or the gall-bladder again I should say the position of the mass felt would not be at all characteristic, the stomach symptoms should not be so notable and he should not have so much dehydration.

I do not think I can make any other diagnosis. Of course there are a great many facts that we have not got, but on the facts we have, I think the most natural supposition is a cancer of the pylorus.

Anatomical Discussion by Dr. Richardson

The case was one of carcinoma of the pancreas with very unusual metastases.

The appendix presented as a columnar mass 7 cm. long by 8 mm. by 7 mm. The thickened wall was markedly infiltrated with carcinoma cells. Extending up from the appendix, which presented a rough, fibrous-like network on its surface, there was a chain of glands running up into the mesentery.

Along the aorta, about the head of the pancreas and out along the body and tail there were large columns of markedly enlarged retroperitoneal glands. They were all infiltrated with new growth tissue—carcinoma.

The gall-b'adder was considerably distended, the bile-ducts a little dilated above the head of the pancreas, but in the region of the pancreas rather small. The head of the pancreas, which was somewhat enlarged and showed areas of new growth tissue, was also surrounded by masses of enlarged glands. The glands and the head of the pancreas pressed upon the common bile duct to some extent. Presumably that is what gave him whatever icterus he had. At the time of necropsy I could make out no definite icterus.

The esophagus, stomach, and intestines were frankly negative. In addition to this invasion of the appendix there were along the coils of the small intestine at the mesenteric insertion small masses of new growth tissue. In the liver there were several very small masses of new growth tissue. In the adrenal on each side there was a small mass of new growth tissue. The lumbar vertebrae showed soft grayish areas which turned out to be carcinoma.

The lungs presented an unusual picture. The bronchial glands were involved, as were the glands running up along the trachea. On the left side a prolongation of these carcinomatous glands extended upward to just above the clavicle.

There was quite a hydrothorax on the right, 1000 cubic centimeters, only a few cubic centimeters on the left, of thin brownish fairly clear fluid. The pleura showed a very fine roughish network running all over it which in places fused into small nodes. On section this network extended down into the lung tissue and could be traced for varying distances. In places the network strands fused into nodes and streaks and small areas—a network then of carcinosis.

The heart and circulatory apparatus was out of the picture. There was not much arteriosclerosis.

The head was not examined.

#### PUBLIC HEALTH NOTES

J. ROSSLYN EARP, DR. P. H.

Director New Mexico State Bureau of Public Health

#### THE HEMOLYTIC STREPTOCOCCI

Since the Dicks by their persistence in painstaking experiment demonstrated the part played by hemolytic streptococci in scarlet fever, the importance of this organism has become more and more obvious to bacteriologists and epidemiologists alike. That the same organism may cause a simple sore throat, a tonsillitis or a frank scarlet fever is a fact that must give all health officers furiously to think. Another streptococcal disease, erysipelas, has been shown to

increase in frequency when scarlet fever is epidemic. That the same germ may be recovered from a case of puerperal septicemia and occasionally also from a sore finger should be a source of alarm to obstetricians and general practitioners as well. The possibility that a deadly menace to the parturient woman may lurk in the throats of her apparently healthy and certianly well scrubbed attendants is a possibility that was not present to the mind of Semmelweis nor even to that of his modern disciple, Paul de Kruif!

There seems to be an argument for making throat cultures as routinely in all sore throats as in cases of suspected diphtheria. But here we encounter a difficulty. For while the hemolytic streptococcus is found very frequently in cases of sore throat, tonsillitis and scarlet fever, it is also found quite often in apparently normal throats. Breithaupt who found it in the throats of 50 out of 68 scarlet fever patients also found it in the throats of 25 out of 100 normal controls. We are hardly in a position to keep one quarter of the population permanently in quarantine as carriers!

Practical measures of control will probably have to wait upon progress in the typing of different strains of the hemolytic streptococcus. The present state of research in this field was most interestingly reported by Allison and Gunn² to the Royal Society of Medicine early this year. The majority of cases of scarlet fever have been assigned to four distinct types of which type 2 has been found only in England although strains have been examined from the continent as well as in this country. Gunn's correlation of serological types with clinical findings is so suggestive as to deserve quotation:

Type 2 infections were the most severe and ineluded nearly all the eases of nephritis, rheumatism and endocarditis; Type 1 cases displayed considerable variability in degree of rash and severity of initial attack, but a high incidence of local complications such as adenitis, otitis and mastoiditis; Type 3 infections were of moderate severity and represented fairly closely the moderate or mild type of searlet fever prevalent within recent years, while Type 4 infections were invariably mild, never causing any complications, local or constitutional. When complieations did occur in association with Type 4 infections, evidence of reinfection by a more highly toxigenie strain was found in every ease in the throat or nose and in the local lesion, e.g., otitis. Considerable diversity was observed, as might be expected, in the unclassified group, both in respect of the character of the initial attack and of the occurrence of complica'ions, but, as a rule, those strains were associated with mild clinical forms of the disease. The same close relation between serological type and severity of associated infection was observed in three separate series of scarlet fever cases examined during the period of seasonal prevalence in three successive years.

In this work one does discern a possibility that a time may be coming when epidemiological control of the streptococcus may be placed on the same basis as is our present control of the Klebs-Loeffler bacillus.

Those who wish to take a part in this research will be interested in the description by Scharlau<sup>6</sup> of new medium, consisting of nutrient agar with the addition of 10 per cent sheep's blood, for the cultivation of the diphtheria bacillus. The use of this medium, though it is recommended chiefly for its efficiency in the diagnosis of diphtheria, does simultaneously reveal the presence of hemolytic srteptococci in the specimen.

#### REFERENCES

- (1) Breithaupt, E. Die Bedeutung des Nachweises der hamolysierenden Streptokokken fur die Scharlach prophylaxie. Ztsch. f. Hyg. u. Infektionskr. 113:523, 1932.
- (2) Allison, V. D. and Gunn, W. The Epidemiology of Streptococcal Infections. Proc. Roy. Soc. Med. 25:927, 1932.
- (3) Scharlau, B. Zur bakteriologischen Diphtherie—diagnostik. Zent. f. Bakt. 123:302, 1932.

# PACIFIC RAILWAY SURGEONS MEETING

The Pacific Railway Surgeons are to hold their annual meeting in El Paso on Friday and Saturday, October 7 and 8, 1932. Their meetings are always well attended and they always have a very high class program.

In cooperation with them the El Paso County Medical Society will hold their annual two days clinic.

The tentative arrangement is—the Railway Surgeons will be on the program for Friday and Saturday afternoons and the El Paso County Medical Society clinics will be on the program Friday and Saturday forenoons.

This will be the first annual meeting of the El Paso County Medical Society Clinic, which is to be held each year, but not necessarily in the Fall.

It is not necessary to be a Railway Surgeon in order to attend these meetings and clinics, as all the medical profession of the Southwest are cordially invited.

While the local program is not entirely completed, probabilities are there will be a dinner Friday evening.

It is the hopes of the Railway Surgeons Society as well as the El Paso County Medical Society that everyone will keep these meetings in mind and make arrangements to attend.

# Southwestern Medicine

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# THE PROPOSED CHIROPRACTIC ACT

A determined effort will be made by the chiropractors of Arizona and their misguided and misintormed friends, backed by a powerful national organization with plenty of funds and no scruples, to place this cult in an impregnable position in this state, where they cannot be molested by legislative enactments, and from which position they can make further attacks upon the medical profession and work their will with the gullible public.

It has long been known that the chiropractors all over the land intend to seek the privilege, by legislative act or initiated measures, to practice medicine, surgery and obstetrics, to enter hospitals, to demand that Industrial Commissions accept their work and pay their fees. In short they intend to become doctors by proclamation instead of preparation. Arizona is one of the states on which they are concentrating this year. They will succeed unless the medical profession of the state can inform the intelligent voting public what it is all about.

We print below an analysis of the proposed initiative measure, this analysis having been made for the Public Welfare Committee of the Maricopa County Medical Society:

There have been filed with the Secretary of State petitions with a total of 13,611 signatures initiating a measure governing the practice of chiropractic in the State of Arizona, and amending Sections 2533-2540 of the Revised Code of Arizona, 1928, which is the present law governing the same subject. We believe that the writer of this letter orally stated that he understood that the proposed measure was a constitutional amendment. He made that

statement from a newspaper report and before our Mr. Howe had examined the records of the Secretary of State and prepared and filed the negative argument. It is an initiative measure to amend the present statute concerning chiropractic and is not a constitutional amendment. However, being an initiative measure to be voted upon by the people at the coming general election, if carried by a majority vote at such election it could never be changed by legislative action, but such change can only be effected by another initiative measure carried by a majority vote of the people at another general election. Therefore, insofar as its flexibility is concerned, it would practically perpetuate the Chiropractors in their profession under the regulations named in the proposed measure. For such reason we deem it a dangerous law, and it should be defeated at the election. The regulation of all professions should be flexible and subject to change by legislative action and that is particularly true of the healing art, which is rapidly progressing and subject to frequent changes in regulation.

The proposed measure changes the present law in several respects, which we will briefly set forth:

1. The present law does not expressly define Chiropractic except by providing: "The licensee may adjust by hand any articulations of the spinal column." The proposed law provides that the licensee may practice chiropractic defined as a system of treatment that employs palpation, nerve tracing, analysis, and adjustment of any displaced vertebrae in the spinal column and of any other abnormalties and which teaches that abnormal health is caused by the interference with nerve energy and health is restored by locating and removing any interference with the transmission of nerve energy. It is quite difficult for us to determine whether the proposed definition enlarges the scope of the Chiropractors' operations and a medical man can determine that better than we. In our mind there is no doubt that the Chiropractors, with this measure, propose to enlarge their operations under their licenses, because quite pointedly there is omitted from the proposed measure the following clause contained in the present law:

"The licensee may adjust by hand any articulations of the spinal column, but may not prescribe or administer any medicine or drug, practice major or minor surgery, obstetrics, or any other branch of medicine, nor practice osteopathy."

- 2. The proposed measure contains a clause providing that the Chiropractor shall have access to practice chiropractic in any hospital supported in whole or in part by public funds, which is not contained in our present law.
- 3. The proposed law provides that the Chiropractor shall be subject to all regulations relating to public health and sanitation, and shall be qualified to sign death certificates and all other certificates pertaining to public health and sanitation. Such provision is not in our present law.
- 4. The proposed measure provides that \$5.00 out of each license fee shall be paid over to the Arizona State Chiropractic Association for educational purposes. We doubt the constitutionality of this last provision.

In our opinion, this proposed measure is intended first to enlarge the scope of the operations of the Chiropractor and grant him privileges which he does not now have, and second, and the more serious objection, it would entitle him to practice under the regulations set forth in the proposed bill and not subject to future change by the Legislature of the State of Arizona.

### MEPHITIC OR JUST PLAIN DUMB

"Whereas it appears that an impression exists in the minds of many members of this Association that certain members have been instrumental in encouraging certain attorneys to file suit for malpractice against our members whether purposely or unconsciously, thereby causing the Association increased expense and trouble, now, therefore, be it resolved, that the Medical Defense Committee shall have authority to require attendance to its meetings of all concerned in future suits for the purpose of determining the ethical attitude toward the cause in question."

The Council of the Arizona State Medical Association, at the Globe meeting last April, thought it expedient to adopt this resolution and broadcast the sentiment therein expressed to the constituent members of the Association. Certainly it is a very cautious and mild expression of an indignation which we know the members of the Medical Defense Committee feel about some of the cases they have been compelled to handle.

A physician who is consulted by a new patient and knowingly encourages him to bring suit aganist his former medical advisor does this out of a malicious desire to injure his fellow practitioner, or else he has that peculiar atrophy of thinking power which our high school students so expressively characterize as "dumb." We think that few doctors are so mephitic in their moral perception that they are consciously guilty of this-but there are a few. No organization can accumulate three hundred members without getting a few sour ones. Most of this trouble, however, arises from the unconscious blackening applied to another's reputation when we strain to establish our own in the new patient's mind. "Yes, I could have done something with that injury, if the job had not been bungled before I saw it." Perhaps not so bluntly stated, but leaving just that impression in the mind of the hearer. In ninety times out of a hundred the statement has not the merit of being true, and out of just such falsehoods or halftruths most of our malpractice suits arise. No malpractice suit in Arizona will ever get into court until SOME doctor gives SOME patient this false idea.

# COMMERCIALISM VERSUS PROFESSIONALISM

Under this somewhat ambiguous title the Texas State Journal of Medicine of February, 1932, discusses a matter which should interest all doctors who desire honesty and square dealing from all those to whom they must look for the manufacture and dispensing of the drugs they must use to treat their sick patients. Quoting from the editorial in the Texas journal:

We do not know whether this title is fairly descriptive of the idea we are endeavoring to express here. Our observation is that for many years the profession of Pharmacy has experienced much travail in its effort to remain a profession. Its necessarily close association with the commercial enterprise known as "the drug store," or "the pharmacy," or what not, principally the first named, has presented complications difficult if not impossible to overcome. What has happened is familiar to most of our readers. That is another story.

Some years ago, manufacturers of pharmaceuticals stumbled into this same bog-hole, from which it has been partially excavated by the medical profession, through the Council on Pharmacy and Chemistry of the American Medical Association. That is also another story, and an interesting one.

Another phase of the general problem has just come to our attention, quite accidentally. One of the large manufacturers of a product extensively prescribed by practicing physicians, and extensively used for that reason, was, it seems, told by the representative of a powerful drug chain organization that it must make certain concessions to "modern merchandizing methods," or else—. The first thing wanted was an extra discount. This was needed in

order that the products in question might be advertised to the public. The advertising was deemed necessary in the interest of both the manufacturer and the chain organization which proposed to handle the products in question. The answer of the manufacturer was that he did not desire to advertise his products to the public. He prided himself that he advertised only to the medical profession. He felt that the public had no business prescribing for itself, even such a good product as he made.

The retailer urged that goods such as those in question could be sold in larger quantities by displaying them in windows, advertising them in newspapers, and by the recommendation of clerks. The manufacutrer did not want any of those procedures followed. His products were marketed only upon the prescriptions of physicians, for which reason the container did not even carry dosage directions. It was felt that the patients must get the necessary instructions from the physicians. The retailer urged that the manufacturer was hiding his candle under a bushel; that doctors were stupid, and do not know as much about the real value of the products in question as the c'erks in the stores could be made to know; that the patients now make inquiries of these same clerks for advice in such matters. The retailers promised that if formulas and information were placed in the hands of clerks, and the suggested advertising methods followed, the goods in question would sell as they never had sold before.

The manufacturer refused to accede, and the chain-store concern threatened to break the manufacturer and, we are told, an effort is being made to make good the threat. An edict has gone to all clerks to dispense the product of another manufacturer. In none of this large number of drug stores may the product of this manufacturer be had except definitely named in the prescription of a physician.

This article refers to Mead-Johnson & Company. This firm is ethical in every way. They do not advertise to the laity and there is no direction nor feeding chart on their packages. They tell the purchasers to ask the physician for the proper feeding directions for their children. Their motto is "We Are Keeping the Faith." They are doing this with the medical profession and the least we can do is to reciprocate. If the doctors want this sort of cooperation, it must be mutual. A one-sided cooperation will not last.

# HARRY W. SQUIBB

The medical profession of Graham County and of the state of Arizona are profoundly grieved at the untimely death of Dr. Harry W. Squibb of Safford, who died during the first week of August, following an acute illness. Dr. Squibb was a well known figure at medical gatherings, as well as in the community life of his county.

He was born in 1888, taking his medical degree

from Washington University in 1915, practicing in that state for several years. He came to Arizona in 1925 and with Dr. James Morris organized the Morris-Squibb Hospital at Safford. He was a regular attendant at the state and southwestern medical gatherings, helped to organize the Graham County Medical Society and served it in several official capacities. He was the type of practitioner whom we can ill afford to spare from our circles, and his passing is deeply mourned by us-

### BASCOM FRANKLIN MORRIS

The Pima County Medical Society and the Arizona State Medical Association have lost a valuable member in the death of Dr. Bascom F. Morris of Tucson who died early in June of pneumonia.

Dr. Morris was forty-four years of age, a graduate of the Vanderbilt University School of Medicine, Knoxville, Tennessee, class of 1910. He came to Arizona in 1915, locating in Tucson where he had practiced his specialty of eye, ear, nose and throat since that time. Prominent in the circles of his county society, he was a member of the Arizona State Medical Association, the American Medical Association, a fellow of the American College of Surgeons, in service during the World War, on the staffs of the Southern Methodist Hospital and St. Mary's Hospital, of Tucson.

#### THE BASIC SCIENCE BILL

There is printed in this issue the text of the Basic Science Bill which the Public Welfare Committee of the Arizona State Medical Association intends to introduce in the forthcoming legislature, provided the initiated measure being fostered by the chiropractors fails to pass in the general election. Should that initiated measure pass, it will be useless for the Basic Science Bill, or any other measure designed to protect the public from exploitation by healing cults or poorly prepared practitioners of any sort, to be proposed.

### NATIONAL TUBERCULOSIS AS-SOCIATION MEETING AT COLORADO SPRINGS

The Twenty Eighth Annual Meeting of the National Tuberculosis Association, which met in Colorado Springs the first week in June, attracted a number of men from Arizona and New Mexico. Drs. John W. and Robert Flinn presented a paper of

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Heliotherapy in the Scientific Section. Dr. E. A. Gatterdam had an exhibit on Atelectasis in the x-ray exhibit. Dr. Leroy Peters was made a member of the Executive Committee of the Association and also was elected vice-president of the American Sanatorium Association. The Clinical and Pathological sections of this Association is the outstanding meeting of tuberculosis specialists.

# ARIZONA BOARD OF MEDICAL EXAMINERS

At the July meeting of this Board, licenses were granted to eight applicants, as follows:

CLARK LORENZO ABBOTT, Oakland, Calif., graduate of Rush Medical College (1900), licensed by reciprocity.

HAROLD WILLIS KOHL, Tucson, Ariz., graduate of University of Minnesota (1925), licensed by reciprocity.

ROY CHESTER WARREN, Clifton, Ariz., graduate of University of Oklahoma (1928), licensed by reciprocity.

ROBERT M. MATTS, Good Samaritan Hospital, Phoenix. Ariz., graduate of Northwestern University (1931), by examination.

LAWRENCE T. BROWNING, Phoenix, Ariz., graduate of University of Louisville (1926), by examination.

MARGUERITE S. WILLIAMS, Loma Linda, Calif., graduate of College of Medical Evangelists (1932), by examination.

ROBERT ALAN HICKS, Tucson, Ariz., graduate of University of Michigan (1930), by examination.

EDITH E. NORMAN, Lois Grunow Memorial, Phoenix, Ariz., graduate of Rush Medical College (1927), by examination.

B. M. BERGER, M. D., Secretary.

# JOHNS HOPKINS BONE PATHOL-OGY AND RADIOLOGICAL CONFERENCE

One of the most interesting and highly educational meetings to be found anywhere is the thrice yearly pathological conference on pathology and diagnosis, held in the Surgical Pathological Laboratory at Johns Hopkins University. This diagnostic conference was organized by Dr Bloodgood and is financed by the Chemical Foundation through the financial assistance of Mr. F. P. Garvan. The Fall Conference will be held September 19 to 24. Any doc-

tor desiring to be put on the mailing list for these meetings should write Miss Maude E. Walker, Surgical Pathological Laboratory, Johns Hopkins University, Baltimore, Md.

# FORMER PHOENICIAN WITH THE MENNINGER CLINIC

Cards have been received announcing the addition to the staff of The Menninger Clinic, at Topeka, Kans., of Dr. Henry M. Benning, who will give special attention to problems of internal medicine in psychiatry. Dr. Benning is the son of Nelson W. Benning, general secretary of the Y. M. C. A. at Phoenix, and has many acquaintances in Phoenix. Following the completion of his medical work at Cclumbia University, Dr. Benning has been with the Roosevelt Hospital for three years.

### WESTERN BRANCH OF AMERI-CAN UROLOGICAL ASSOCIA-TION

This meeting always attracts a number of men from the Southwest. They held a very successful meeting in Portland on July 1 and 2, the attendance being the largest this Association has ever recorded, many of the members coming by plane. One plane started at Dallas, picking up passengers at Tucson, Los Angeles and San Francisco. Dr. A. W. Hunter of Vancouver was elected president, Dr F. S. Dillingham of Los Angeles, vice president; George W. Hartman of San Francisco, secretary-treasurer; Drs. W. G. Schultz (Tucson), M. B. Wesson (San Francisco), and Wirt B. Dakin (Los Angeles) members of the executive committee.

Dr. W. G. Schultz of Tucson presented a paper on Renal Tuberculosis. Dr. David M. Davis of Phoenix attended the meeting and participated in the discussions. Dr. H. M. Purcell of Phoenix was elected to membership in the Association. The 1933 meeting will be held in Vancouver, B. C.

### LOCATION OPEN IN TEXAS

Dr. T. E. Standifer, director of the Standifer Sanatorium, at Turkey, Texas, states that he is willing to receive proposals for an association in practice with him. He wishes a man from 50 to 55 years of age, to whom he would consider trading a half interest in his sanatorium and equipment for a suitable home in Arizona. Surgical experience is not necessary, as this can be caquired under Dr. Standifer's direction. Those interested should write directly to Dr. Standifer.

#### COCOMALT

Cocomalt, a powdered food for the preparation of table beverages, manufactured by R. B. Davis Company, Hoboken, N. J., has been accepted by the Committee on Foods of the American Medical Association, under the following descriptions:

Manufacture.—Cocoa (including added irradiated ergosterol), sucrose, and skim milk and egg powders are thoroughly mixed with malt syrup and vanillin flavoring. The mixture is dried at a relatively low temperature to avoid destruction of the vitamin and diastatic values. The finished product is ground, bolted and automatically packed in an atmosphere of carbon dioxide in herme ically sealed containers. The carbon dioxide composes about 75 per cent of the gas mixture in the container.

Ca'ories.-3.9 per gram; 111 per ounce.

Vitamins.—Vitamin D is incorporated in Cocomalt (under license by the Wisconsin Alumni Research Foundation) to the extent of approximately 39 Steenbock units per ounce. Biologic assay shows the presence of from 40 to 45 Steenbock D units per ounce.

Claims of Manufacturer.—Especially intended for the preparation of table beverages with milk. Cocomalt enhances the food value and flavor of milk. Many who dislike plain milk, especially children, invalids, convalescents and the aged, enjoy Cocomaltmilk beverage. One ounce of Cocomalt, which is recommended for each g'ass of beverage, contains from 40 to 45 vitamin D units (Steenbock) and richly contributes to the vitamin D dietary needs of the body. A hot beverage promotes relaxation. "A hot Cocomalt' before retiring is an aid to restful sleep.

# SIMPLIFYING SUMMER INFANT PROBLEMS

Vacation travel presents fewer difficulties in caring for infants on S M.A. Instead of using milk from dairies of unknown standards, the mother in feeding S.M.A. is using a food made from milk which her physician knows to be produced under strict sanitary requirements and rigorous inspection.

Refrigeration is unn cessary because individual feedings of powdered S.M.A. may be made up as needed. If the supply runs out, S.M.A. is available virtually everywhere in the United States in prescription pharmacies from Skowhegan to Hollywood. S.M.A. is not a grocery product for adults, but a scientific antirachitic breast milk adaptation designed for infants.

S.M.A. is made to resemble nature's own formula, breast milk, as closely as modern scientific knowledge and laboratory control can accomplish—certainly closer than a trial and error formula.

### AN ACT TO CREATE A BOARD OF EXAMINERS IN THE BASIC SCIENCES

(Note: This is a copy of the bill which the Committee on Public Welfare of the Arizona State Medical Association proposes to introduce in the coming session of the State Legislature.)

Section 1. Basic Sciences Defined; Practicing Healing and Practice of Healing Defined: Wherever the term "Basic Sciences" is used in this act and not otherwise specifically defined, the same shall be understood and construed to mean and include all matters pertaining to anatomy, physiology, pathology, chemistry, bacteriology and hygiene. Wherever the term "Practicing Healing" or "Practice of Healing" is used in this act, unless otherwise specifically defined, the same shall be understood and construed to mean and include any person not hereinafter excepted from the provisions of this act who shall in any manner for any fee, gift, compensation or reward or in expectation thereof, engage in, or hold himself out to the public as being engaged in the practice of medicine or surgery, the practice of esteopathy, the practice of chiropractice, analysis, treatment, correction or cure of any disease, injury, defect, deformity, infirmity, ailment or affliction of human health or disease, or who shall for any fee, gift, compensation or reward, or in anticipation thereof, suggest, recommend or prescribe any medicine, diet or any form of treatment, correction, or cure therefor; also any person or persons, not hereinafter excepted from the provisions of this act individually or collectively who maintain an office for the reception, examination, diagnosis or treatment of any person for any disease, injury, defect, deformity, or infirmity of body or mind, or who attaches the title of doctor, physician, surgeon, specialist, M. D., M. B., D. C., D. O., or any other word abbreviation or title to his name indicating or designed to indicate that he is in the practice of healing.

Section 2. Board of Examiners in Basic Sciences: Created and Established: There is hereby created and established a board to consist of five members, citizens of the state of Arizona, to be known and designated as the State Board of Examiners in the Basic Sciences.

Section 3. Same; Members, Appointment, Terms of Office; Vacancies, Oath of Office. The Board of Regents of the University of Arizona shall appoint from the Faculty of the University, five persons to serve as members of the Board of Examiners in the Basic Sciences. These members shall be chosen from the professors, associate professors or assistant professors of the Faculty. The first appointments shall be made as soon as may be after this act shall take effect. The terms of office of the members first appointed shall begin when they are appointed and qualify and shall continue thereafter for the following periods: Two members until January 1st, 1934; two members until January 1st, 1936, and one mem-

ber until January 1st, 1938. Upon the expiration of such terms and all terms thereafter, the Board of Regents shall appoint a successor to the member whose term expires for a term of six years. Vacancies in said board shall be filled by appointment by the board of regents within 60 days after such vacancies occur for the balance of the unexpired term and each member shall serve until his successor qualifies. Each member of the board before entering upon the discharge of his duties shall take, subscribe and file with the Secretary of State, the oath of office perscribed by the constitution.

Section 4. Organization of Board; Duties. Within 30 days after the appointment of the members of the State Board of Examiners in the Basic Sciences provided for in Section 3 of this act, they shall assemble and organize by the election from their members of a president, a vice-president, and a secretary-treasurer, who shall each serve for one year or until their successors are elected and qualified. Said boards shall have authority to prescribe such reasonable rules and regulations relative to the examination of applicants in the basic sciences as may be found necessary for the performance of its duties. As to any matters coming under its jurisdiction the board in session may take such testimony as it may deem necessary in the exercise of its powers and performance of its duties under the provisions of this act, and any member of said board shall have the power to administer oaths in the taking of such testimony. Three members of the board shall constitute a quorum for the transaction of business. Said board shall have a common seal which shall be kept by the secretary, whose duty it shall be to keep a record of all proceedings of the board, including the register of all applicants for examination therein, prescrying the names, ages, addresses, educational qualifications, and the result of their examination, which shall at all times be available for inspection by any parties in interest. Said board shall meet at the University of Arizona and there conduct examinations in the basic sciences four times each year, respectively on the first Tuesday in January, April, July and October, and may hold such other meetings at such times and places as the board may determine. Said board may appoint and fix the salaries of an assistant secretary and such other employes and shall have the power to employ such expert assistant or assistants as it may dem necessary to carry out the purposes of this act. Such employers shall hold their rolitions at the pleasure of the board. The compensation of each member of said board shall be \$10.00 for each day actually spent in the performance of his duties, together with actual necessary expenses payable out of the general fund of the University. Examinations shall be in the basic sciences only, and may be both written and oral, and by demonstration or other practical tests, as the board may determine.

Section 5. Examinations: Examinations shall be of such a nature as to constitute an adequate test as to whether the person so examined has such knowledge of the elementary principles of such sci-

ences as taught at the University of Arizona, in one year's instruction of thirty-six weeks, or as taught in one year's instruction of thirty-six weeks at any college or university accredited by the University of Arizona, or the equivalent thereof.

Section 6. Fees: Any person not hereinafter excepted from the provisions of this act desiring to practice healing in this state shall apply to the secretary of the State Board of Examiners in the Basic Sciences, on blank forms prepared and furnished by said board, to be examined in the basic sciences at the next examination therein following the making of such application and for a certificate of registration in the basic sciences accompanying such application with a fee of \$20.00, and sufficient and satisfactory proof that the applicant is 21 years of age or over, is of good moral character and has an education equivalent to graduation from an accredited high school of this state, provided that no applicant shall be required nor requested to disclose in such application the professional college or university he may have attended nor the branch or system of healing which he intends to pursue.

Section 7. Certificate of Registration: If in such examination the applicant attains a grade of 75 per cent in each subject he shall receive a certificate of registration in the basic sciences, signed by the president and secretary and sealed with the seal of said board. If he fails in one or two subjects only, he may be re-examined in the subject or subjects in which he failed, at any examination within one year without further application or examination fee, and upon lattaining a grade of 75 per cent therein, he shall receive his certificate of registration in the basic sciences. If he fails in three or more of the subjects, he may make a new application for examination in all subjects and again pay the secretary-treasurer of said board the examination fee of \$20.00.

Section 8. Who Must Secure Licenses: Any person not hereinafter excepted from the provisions of this act who was lawfully authorized to practice healing, as by this act defined, in this state on the date this act takes effect, and who was on that date regularly licensed or registered in the manner thereby provided, shall upon application as herein provided, receive from the State Board of Examiners in the Basic Sciences a certificate of registration in the basic sciences without examination therein; provided, however, that on or before January 1st, 1934, every such person shall apply to the secretary of said board for such certificate of registration, accompanying such application with sufficient and satisfactory evidence that he was, on the date of the passage of this act, lawfully authorized to practice healing or regularly licensed or registered according to law in the particular branch or system of healing by him pursued and specifying in said application the branch or system of healing pursued by the applicant, the school from which he graduated, if any, and the date of graduation from said school together with a fee of \$3. Such certificate of registration shall recite that registration is made solely as a per-

son lawfully authorized to practice healing or licensed or registered according to law on the date this act takes effect, and that same was issued without examination in the basic sciences. Any person entitled to a certificate of registration in the basic sciences without examination therein pursuant to the provisions of this section who fails to apply for same in the manner herein provided shall not receive such certificate of registration except upon application for examination and actual examination in the basic sciences as hereinbefore provided; provided, however, said State Board of Examiners in the Basic Sciences may lafter the first day of January, 1934, in its discretion upon payment to it of a fce of \$25 issue a certificate of registration in the basic sciences without examination to any person who would have been entitled thereto pursuant to the provisions of this section upon applying therefor on or before the first day of January, 1934, and who makes applica ion therefor in the manner herein provided and shows good cause why said application was not made on or before the first day of January, 1934.

Section 9. Applicants from Other States Need Not Take Examinations in Certain Cases: The State Board of Examiners in the Basic Sciences may issue a certificate of registration in the basic sciences without examination therein to an applicant who presents sufficient and satisfactory evidence of having passed examinations of the basic sciences as defined by this act before the National Board of Medical Examiners or a legal examining board of officers of another state or of a foreign country if the standards of such other state or foreign country are determined by said board to be as high as those of this state, and if such other state or foreign country shall be then according a like privilege to persons licensed to practice healing under the authority of the laws of this state.

Section 10. Disposal of Fees: The secretary-treasurer of the board of examiners of the basic sciences sha'l on or before the 15th day of January, April, July and October, transmit to the bursar of the University of Arizona a record of all expenditures of the board for the previous quarter of the year, with all fees collected during such previous quarter, the same to be credited to the general fund of the University.

Section 11. Appeal from Board's Decision. Any applicant who has been denied examination by the board may within 30 days after such denial appeal to the superior court of Pima County and such court shall on such appeal inquire into the cause of such denial. If in the opinion of the court admission to the examination was refused without just cause, the court may order the board to examine the applicant. Notice of an appeal from the denial of the board of the right to examination shall be served by leaving with the secretary of the board an attested copy thereof within thirty days after said board has notified the applicant of its refusal to examine him. Hearings of such appeals shall proceed in accordance with such rules as the court may determine.

Section 12. Certificates—Void \* \* \* Cancellation: Any basic science certificate which is issued contrary to this act shall be void. The certificate issued by State Board of Examiners in the Basic Sciences shall be automatically revoked by the revocation of any license issued to such person to practice the healing art or any branch thereof.

Section 13. Recording of Certificates: Each certificate issued by the Board of Examiners in the basic sciences shall be recorded by the secretary with the Secretary of the State Board of Health.

Section 14. Penalties—No Certificate: Any person who shall practice the healing art or any branch thereof without having obtained a valid certificate from the State Board of Examiners in the Basic Sciences, except as otherwise authorized by section 18 of this act, shall be fined not more than \$100 or imprisoned not more than three months, or both in the discretion of the court.

Section 15. Fraudulent Certificates: Any person who shall obtain or attempt to obtain a basic science certificate by any dishonest or fraudulent means, or who shall forge, counterfeit, or fraudulently alter any such certificate, shall be fined not more than \$100 or imprisened not more than three months, or both, in the discretion of the court.

Section 16. Practicing Without Certificate. Penalty: Any person who shall obtain or attempt to obtain a license to practice the healing art or any branch thereo. from any board authorized to issue any such license, without presenting to said licensing board a valid certificate issued by the State Board of Examiners in the Basic Sciences, as in this act required, shall be fined not more than \$100 or imprisoned for not more than three months, or both, in the discretion of the court.

Section 17. Penalty for I suing Invalid Certificates: Any person who knowingly issues or participates in the issue of a license to practice the healing art or any branch thereo? to any person who has not presented to the licensing board a valid certificate from the State Board of Examiners, in the Basic Sciences, or to any person who has presented to such licensing board any such certificate obtained by dishonesty or fraud, or any forged or counterfeit certificate, shall be fined not more than \$100 or imprisoned for not more than three months, or both, in the discretion of the court.

Section 18. Investigation. Duties of Officers: The secretary of the State Board of Health shall investigate any supposed violation of this act and report to the proper county attorney of the causes that in his judgment warrant prosecution. Every pelice officer, sheriff, and peace officer shall investigate supposed violations of this act and apprehend and arrest all violators thereof. It shall be the duty of the attorney general and of the several county attorneys to prosecute violations of this act.

Section 19. Callings Exempt: This act shall not be construed as applying to optometrists, dentists, midwives, or nurses practicing within the limits of their respective callings; nor other persons licensed to practice the healing arts or branches thereof in

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this state when this act takes effect, nor to affect the practice of their religious tenets by members of any church, provided they do not administer drugs or medicine, nor perform surgical or physical operations nor assume the title of or hold themselves out to be physicians or surgeons.

Section 20. Limitation of Provisions: No provision of this act shall be construed as repealing any statutory provisions now in force at the time of its passage with reference to the requirements governing the issuing of licenses to practice the healing arts or any branch thereof, except as herein provided. The unconstitution laity of any part of this act shall not be construed as invalidating any other part thereof.

# INFORMATION ON "THE BASIC SCIENCE" BILL

Q: What is the Basic Science Bill? A: The Basic Science Bill will provide that an examination in the Basic Sciences must be taken by every candidate for a license to practice any form of the healing art in Arizona. This will insure that whatever the kind of doctor the State admits to practice will have at least a minimum of educational advantages.

Q: What are the Basic Sciences? A: The Basic Sciences are Anatomy, Pathology, Physiology, Chemistry, Bacteriology, and Hygiene.

- Q: What is Anatomy? A: Anatomy teaches the structure and mechanism of the human body.
- Q: What is Pathology? A: Pathology teaches of the changes which disease produces in the body.
- Q: What is Physiology? A: Physiology explains the action and function of the organs and tissues of the body.
- Q: What is Chemistry? A: Chemistry is the science which teaches of the elements of which all matter is made. The science of diet must naturally depend upon chemistry.
- Q: What is Bacteriology? A: Bacteriology is the study of germs—the causes of diseases.
- Q: What is Hygiene? A: Hygiene teaches how to avoid disease, how to obtain good water and milk supplies, how to properly dispose of sewage and other waste and how to prevent and check infectious diseases, etc., etc.
- Q: Of what use is all this knowledge to the cultists who claim to heal without drugs or surgery? A: Frankly speaking, the medical profession honestly believes that the interest of society would best be served by a law prescribing a full course in a medical school for every person who practises any type of the healing art.

Only after acquiring a working knowledge of the basic principles in both health and disease is one in a position to decide what method of treatment is



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best. It is a sad commentary on the quality of our civilization that greater emphasis often seems to be laid, according to our views, upon proper plumbing than upon proper healing. One can form his own opinion of the kind of "Knowledge" taught in cultists schools from the fact that NOT A SINGLE REPUTABLE UNIVERSITY IN THE WHOLE WORLD RECOGNIZES THOSE SCHOOLS.

However, this is not the place to enlarge on this unpleasant subject. The fact is that the legislature has seen fit to allow certain cultists to treat disease, provided they do not use drugs or surgery. It may be argued that not much harm is caused by this law to the community at large. We maintain, however, that many epidemics of infectious disease owe their spread to lack of scientific knowledge and failure to recognize the dangerous nature of the disease. We believe that if all persons licensed to practice the healing art are compelled to be trained in the so-called basic sciences, there will be a greater chance of a healer not doing harm-and at least not helping to spread disease to make epidemics. The Basic Science Bill will raise the standard of all healers.

The Bill does not undertake to dictate to the cultist how to treat his patient. It does demand of a healer that he know what disease is and that he be able to recognize contagion when he sees it.

Q: Does this mean that all cultists will have to take the examinations in the Basic Sciences? A: No. The law is not retroactive. Therefore, the physi-

cians and cultists already licensed will not be affected by this Bill.

Q: Will those who claim to cure disease by prayer have to take the Basic Sciences examinations?

Q: Who are going to be the examiners in the Basic Sciences? A: Members of the Faculty of the University of the State of Arizona. (Members of the medical profession, on account of their opposition to cultists on principle, will not be eligible to serve on the board of examiners.)

Q: This bill may be all right. But is this the opportune time to create a new board which would seem a new burden on the already overtaxed tax-payer? A: This new board will cost the tax-payer nothing. The entire expense will be covered by the examination fees. Indeed, it is probable that there will be a surplus for the general fund of the University.

Q: These cultists have been doing business in Arizona many years, and as far as we can tell, no great harm has been done to the community at large? A: During the past years, we have had several outbreaks of diphtheria, whooping cough, typhoid, and epidemic meningitis. A number of these cases were treated by the cultists without notifying the health authorities. They were discovered when physicians were called in before the patients died. It is reasonable to suppose that if the proper quarantine regulations had been enforced, the loss of life would

# THE ROBINSON CLINIC

The Robinson Neuropsychiatric Clinic offers a complete service to the physicians of the Southwest for the diagnosis and treatment of all afflictions affecting the nervous system. Among these may be listed the following:

A study of the psychotic patient, to determine the cause and a rational method of therapy to alleviate the symptoms.

A training school for different children which provides medical treatment, without interrupting the school work, and also provides schooling for those who cannot attend the regular schools.

A complete neurosyphilitic service, including the latest form of heat therapy—generalized diathermy—which gives all of the advantages of malaria without the dangers.

A sane treatment of drug addiction, which takes into account the underlying psychic causes and attempts a permanent cure by removal of these factors.

A diagnostic service for organic neurological conditions, including complete laboratory studies where indicated.

As mentioned before, we have felt that rate reductions were advisable and this has been done within the last few months.



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### Drug and Alcohol Addiction

Paul A. Johnson, M.D. Internist have been much less and the outbreaks would have been checked much sooner.

Q: If that is so, why was not the Basic Science Bill introduced until now? A: The Basic Science Bill has been repeatedly introduced and as often lost in the political shuffle. We physicians, the sponsors of the Bill, innocently believed that inasmuch as the bill is in the interest of the public health, it would only be necessary for us to explain it to the law givers and they would surely vote for it. We have learned an important lesson—that politics is more powerful than common sense and public welfare. So this time we are going to play politics—in the interest of the community. This time the medical profession is well prepared and is going to exert its influence to the utmost to the end that the Basic Science Bill shall be enacted into law.

We are already assured of the support of public-spirited citizens and of many women's clubs throughout the state. We are undertaking a wide campaign of education to bring in line the less informed part of the voting population. Too long have the cultists had the use of the avenues of publicity all to themselves. From now on we also mean to engage in publicity. When the community is once aroused to the dangers to which they are exposed by the inadequate legal safeguards against the spread of epidemics, we know what it will do.

Q: Is it not poor business on the part of physicians to sponsor the Basic Science Bill? A: From time immemorial, the physician has considered it his duty to teach people how to prevent disease, though by doing so he was undermining the source of his income. Long before the word "Service" was coined, the medical profession inscribed the true meaning of "Service" into the medical Code of Ethics. The aim of scientific medicine is not only to get a patient well but also to keep him well. It was and is the medical profession that has taught people how to prevent smallpox, typhoid, diphtheria, and so forth, though by so doing it lost a great share of its income. And when we are advocating the passage of the Basic Science Bill, we are only following our ancient tradition.

Q: How many states have a Basic Science law? A: Connecticut, Minnesota, Nebraska, Washington,

Wisconsin, Arkansas, and the District of Columbia, had the law up to 1931, and in other states all persons are compelled to take the examinations given by the medical board, which of course includes the basic sciences.

Q: In these days of general economic distress, should not the Legislature devote all its time to purely economic questions? A: Considering that the Basic Science Bill tends to safeguard the public health, it is at least as important as any measure tending to protect the tax-payer's purse. There is also a further economic reason for the bill. Arizona's former prosperity depended on mining, cattle and other industries. These are much damaged; but

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And still one more consideration: When this Bill becomes a law, it will also have the effect of discouraging quackery and charlatanism in general. At present, a young man with an eye on business, may not see the advantage of spending many years in a medical school and hospital when he can make money by a short cut as a cultist. If even as a cultist he will be compelled to acquire a considerable amount of knowledge, he might learn to like scientific medicine and decide to spend a few more years in study and become a real physician.

Q: If the Basic Science bill becomes a law, will those seeking a license to practice regular Medicine also have to take the examination in the Basic Sciences? A: Yes, and this will help guard the state against poorly trained doctors of medicine, which is just as important as keeping out poorly trained cultists.

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And talk about a picture of health! I believe he would take first prize in any baby contest.

I'm going to bring him down to your office Wednesday as you suggested. That S.M.A. folder you gave me says even a breast fed baby should be under the supervision of a physician and I think myself that it's better to keep the baby well than to wait until trouble starts.

We certainly want to thank you for bringing our baby along so well, Doctor. It increases our confidence in you as our family physician. Tom has already "said it with dollars", but I wanted to thank you personally, too.

And I'm going to persuade Mrs. Brown,—that's my neighbor with the baby that's not gaining—to come along on Wednesday so you can prescribe the proper diet for him too.

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### MERCK BUILDING NEW RE-SEARCH LABORATORY

Ground was recently broken for the erection of a research laboratory building at the works of Merck & Co., Inc., at Rahway, N. J. The project has been under consideration for some time. George W. Merck, president of the Company, brought it to the attention of the stockholders a year ago. The directors have authorized proceeding with the work at this time, moved by the consideration that it will provide increased employment and that the facilities are urgently needed. The research activities of the Company are at present being carried on in various parts of the large Merck plant—in many cases in make-shift quarters.

The building will be a Colonial type, brick structure, with a central section 40 ft. by 80 ft., of two stories and basement. On each end of this central section will be two one-story wings, 50 ft. by 100 ft. The wings will be connected with the central section by two one-story units, 10 ft. by 38 ft.

The south wing will be devoted to carrying on pure or fundamental research, for which three labaratories will be provided. Another laboratory will be fitted for bio-chemical research, and there will be an adjoining incubator room containing a sterilizer, incubator, and other necessary equipment. In a pharmacological laboratory the physiological action of various chemicals will be investigated. Adjoining each of the laboratories will be offices for the chemists and pharmacologist in this section. There will also be a laboratory for micro-analysis, a microbalance room, an ordinary balance room and an iceroom.

The north wing will contain a large chemical labroatory, 50 ft. by 50 ft., suitable for twelve chemists carrying on applied research and development work. In this wing provision will also be made for carrying on studies on small scale plant operations—the step between research laboratory and factory.

The central section will contain on the first floor the offices and private laboratories of the research directors. In addition, there will be an optical and a physical laboratory; and a laboratory in which research will be carried cut on the containers used for various chemicals.

Here also will be located the library, which will be an outstanding feature of the building. The ceiling runs up into the peak of the roof, giving full height for the stacks for books, which will also be

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carried into the attic spaces made available for this purpose. The arrangement of the library will provide for work tables and complete files of technical literature from all over the world. The work of the librarian and abstractors will be carried on in adjacent locations. The Patent Department offices also will be located on the second floor.

The basement of this section will contain a constant temperature and humidity room, a dark room, a combustion laboratory, a glass-blowing room, and a carpenter shop. Provision has been made also for a chemical and glass-ware storeroom, a machine room and a battery room.

Merck & Co. Inc.'s deci ion to carry out such an ambitious plan at this time adds another to the growing list of American chemical companies who have determined not to allow the period of depression to diminish their activities in research and technical endeavor. It is interesting to observe the manner in which the forward-looking companies are meeting the present situation, as contrasted with the all too prevalent attitude during 1921, which in particular affected chemical companies adversely and led many to discontinue research staffs and abandon all development work. Dr. Hugh Taylor, head of the Chemical Department at Princeton University, recently took occasion to point out that the continued pursuit of scientific investigation by industrial concerns is one of the most encouraging signs in these times.

#### BOOK REVIEWS

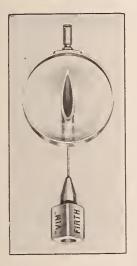
CLINICAL ELECTROCARDIOGRAMS: Their Interpretation and Significance; by Fredrick A. Willius, B.S., M.D., J.D., in Medicine; Section on Cardiology, The Mayo Clinic; Rochester, Minnesota; and Associate Professor of Medicine; The Mayo Foundation, University of Minnesota. With 368 illustrations; Philadelphia and London; W. B. Saunders Company; 1929.

This is a book of electrocardiographs with the explanations thereof. It has 368 figures, all electrocardiogram tracings. It is an extremely valuable reference book, and is unequivocally recommended.

O. H. B.

CANCER: Its Origin, Its Development and Its Self-perpetuation; The Therapy of Operable and Inoperable Cancer in the Light of a Systemic Conception of Malignancy. A research by Willy Meyer, M. D., Consulting Surgeon to the Lenox Hill and Postgraduate Hospitals, New York Infirmary for Women and Children, etc.; Emeritus Professor of Surgery, N. Y. Postgraduate Medical School. Paul B. Hoeber, Inc., New York, 1931; \$7.50.

This book is the compilation from the literature Dr. Meyers started to write as a paper, which soon grew into three, four, and a dozen, papers, and finally into this book. His conclusions are that cancer results from irritation and predisposition. He thinks that all persons whose bodies react with a higher



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than the normal degree of alkalinity are predisposed to cancer.

Part two, in which he discusses the relationship of alkalinity to the development of cancer, is difficult to read. The reviewer was unable to get a clear conception of the author's idea of the explanation; that Coley's fluid is beneficial to sarcoma because it reduces alkilinity, seems a bit difficult to comprehend. Every individual especially interested in cancer should study this book.

O. H. B.

MEDICAL CLINICS OF NORTH AMERICA: (Issued serially, one number every other month. Volume 15, No. 5; (New York Number, March, 1932); octavo of 340 pages with 61 illustrations;

per clinic year, July, 1931 to May, 1932; Paper, \$12.00; Cloth, \$16.00 net; Philadelphia and London; W. B. Saunders Company; 1932.

There are a number of excellent articles in this issue, among which may be mentioned: Early Treatment of Intracranial Hemorrhage in the Newborn; Chronic Familial Edema Affecting All Extremities; A Variant of Milroy's Disease; and Some Clinical Aspects of Radiology of the Heart.

The article which especially attracted attention of the reviewer was: The Clinical Aspects of Bright's Disease, by Dr. Herman O. Mosenthal. The author gives the modern classifications of nephritis with an understandable discussion of it. This article is worth the price of the volume.

O. H. B.

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### TUBERCULOUS PLEURISY WITH **EFFUSION**

I. THE BIOLOGIC AND INVESTIGATIVE ASPECT

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(Read before the New Mexico Medical Society, Santa Fe, New Mexico, May 19 to 21, 1932. Work done in the Division of Experimental Surgery and Pathology, The Mayo Foundation.)

Even a casual examination of any of the great cavities of the body that are bounded by two surfaces of serous membrane, such as the peritoneal, the pleural, or the pericardial cavities, reveals the fact that these surfaces are provided with sufficient fluid to enable them to glide over each other without friction. There is neither too much nor too little fluid. The space between the cavities is never sufficient to be classified as an effusion. It is evident that some controlling mechanism must exist which permits of transference of fluid from the blood stream into these spaces and of resorption of fluids and soluble constituents in the opposite direction-If this were not true, these spaces would either soon become filled with fluids, or, if resorptive processes were in control, they would become entirely dry. Trauma brought about by bacterial, chemical, thermal, or other, factors may readily disturb the normal equilibrium, so that effusions are produced. One should anticipate that reaction to stimuli, of whatever character, would be approximately the same because such varied types of stimuli affects a mechanism of defense which in the main is a standard one. The differences in the response to different stimuli are differences in the detail of the reaction and not in its principle.

Pinner and Moerke undertook an exhaustive research to determine whether the permeability of the diseased pleura is changed in such a way as to inhibit the free exchange of substances between the blood and the pleural space. They accepted what seems to be axiomatic, that free exchange of substances is necessary for the maintenance of normal conditions. It was clear to them that deviations from equality of concentrations of the normal constituents of the blood and of the pleural fluid, would indicate changes in permeability. To determine these deviations, they made an analysis of all physical and chemical characteristics of pleural effusions and compared them with blood taken at the same time. They were able to confirm, to restate, and to suggest that the pleura in its normal state is permeable in either direction to chemical constituents of the blood, but that the permeability is not of the same quantitative order for all constituents, and, finally, that the normal pleura tends rapidly to resorb artificially introduced fluid. They brought evidence that the pleura acts as a semipermeable membrane which offers resistance of variable degree to the passage of diffusible substances and that fluids of variable tonicity are made isotonic with the blood, when resorption occurs and normal equilibrium is again established.

### THE REACTION OF DEFENSE AGAINST TRAUMA

The equilibrium normally existing between permeability and resorption can readily be broken and the reactions brought about by traumatism can be studied. Higgins and I studied the effect of a colloidal suspension of graphite introduced into the pleural space. We found that such a fluid excited an immediate response. Evidently there was an immediate alteration of permeability, permitting rapid passage of fluid into the pleural space. Using a dog, within twelve hours after injection of as little as 15 c. c. of suspension of graphite into one side, both pleural spaces will contain three or four times as much fluid as was introduced. It will be made up of serum, erythrocytes and polymorphonuclear leukocytes. A few lymphocytes and monocytes complete the cytologic picture. The polymorphonuclear leukocytes promptly exercise their function of phagocytosis, and within an hour almost every particle of graphite will be intracellular. The percentage of polymorphonuclears in the first few hours is approximately that in the blood stream. The percentage of mononuclear cells, which also are phagocytes, is less than that of the blood, but, as time passes, the polymorphonuclear elements tewer, they disintegrate and disappear, but the phagocytic monoculear cells increase in number until they become as numerous as the polymorphonuclears were at the onset of the effusion. This reverse of the proportion between the two cellular types of phagocyte is accomplished within seventy two hours, but it becomes apparent within about eighteen hours. Within four days, the fluid is markedly decreased in amount, and within six days the pleural space is empty of demonstrable fluid.

The mechanism of defense seems to include several factors. There is increased permeability; there is also phagocytosis by polymorphonuclear leukocytes, and later by nongranular mononuclear cells, which we believed were first derived from the blood and later augumented in numbers by true histocytes; and, finally, there is resorption, which proceeds with varying speed, apparently very rapidly at first but slower with the passage of time, and accomplished, at least chiefly, by the lymphatic mechanism of the parietal pleura and the mediastinum.

Higgins and I agree with Pinner and Moerke, that intlammatory processes produce increase in permeability, and that the degree of alteration is indicated by the number of hematogenous cells found in incipient effusions. We are unable to state the reasons why complete resorption is relatively so slow. It appears to act rapidly at first, because we have been able to demonstrate graphite within the trabeculae of the sternal nodes within an hour following its injection into the pleural space. It has seemed probable that the speed of resorption is influenced by slowing of the speed of lymphatic circulation, due to overcrowding of the vessels and of the nodes by phagocytic cells and by an abnormally increased volume of serum.

These reactions have seemed to us to represent a normal mechanism of defense which should not be changed in principle, but only in degree, by irritants of any character. We have used many different irritants in colloidal suspension and have introduced them into serous cavities other than the pleura and also into the lung, but the sequence of events has

been the same except in minor details. There was accumulation of serum and hematogenous elements, polymorphonuclear leukocytic phagocytosis succeeded by mononuclear phagocytosis, and gradual resorption, especially by the lymphatic system and secondarily by the blood stream.

### THE SPECIAL DEFENSE AGAINST BACILLI OF TUBERCULOSIS

When one studies the influence of a living organism on a serous membrane, and its ability to alter permeability to such a degree that effusion is produced, it is soon found that the process is not as simple a one as that described when inert substances are employed. There are introduced such factors as susceptibility, sensitivity, chemical fractions, virulence and dosage, as well as the viability and pleomorphic forms of the bacteria employed. The end result is the same; the same mechanism of defense is set in action, only the details of the reaction are different.

With the assistance and advice of Feldman and Montgomery, experiments were undertaken to discover the reactions of the pleura of various types of animals to bacilli of tuberculosis of bovine type. The work is still in progress, but the results of representative experiments on both healthy animals and sensitized animals will be recorded. The animals used were dogs, rabbits and agoutis.

Experiment 1 .-- A normal, neartny dog was used to discover the reaction of the pleura of the nonimmune animal to the bacillus of tuberculosis. A virulent strain of organisms of bovine tuberculosis was employed, and the animal was inoculated intrathoracically with 15 c. c. of a heavy suspension of these organisms in physiologic saline solution. There was no immediate react.on to the injection. Twenty-four hours later the animal was killed and examined, but all organs appeared to be normal and no fluid had formed in the pleural space. Both the costal and visceral pleura appeared to be entirely unaffected, and it seemed apparent at the time that the bacillus of tuberculosis does not cause irritation that will disturb equilibrium sufficiently at the time of injection to bring about an effusion. this respect the bacillus of tuberculosis differs from such inert substances as particulate graphite.

Four weeks later, however, when tissues were prepared for microscopic study, exudates were discovered adherent to the costal pleura and to the diaphragmatic pluera. These were made up of polymorphonuclear and a few mononuclear cellular elements. which exhibited characteristic phagocytic reaction. These cells were filled with bacilli; the mononuclear cells were literally packed with organisms. Intracellular organisms were also found within the lung, tracheobronchial, paratracheal, and sternal lymph nodes, and in the mediastinal tissue,

but not in any of the abdominal viscera. Their presence in all tissues, however, was suspected, and cultures made from the tissues enumerated and from the kidney, liver, spleen, and suprarenal glands, were found to be positive, each giving a well-defined and characteristic growth of acid-fast organisms.

In this nonimmune animal there was no effusion, but within twenty-four hours the necessary pleural lesion had been produced, making an effusion possible when irritability produced by a developing lesion or by secondary infection from the lesion, became sufficient to disturb the forces of permeability and resorption.

Experiment 2.—This dog received, on the same day (February 15, 1932). a similar intrathoracic inoculation of the same strain of bacilli of bovine tuberculosis at that given the dog used in experiment 1. It was examined fluoroscopically from day to day, but no evidence of fluid appeared in the pleural space. Three days following the initial inoculation of 15 c. c. of a suspension of bacilli of tuberculosis in saline, a second inoculation was given, but only one-third the amount was used. Ten days later the animal was still free of any evidence of effusion.

After five weeks had passed, the dog seemed to be in good health, except that it had begun to lose weight, and at this time it became weakly positive to tuberculin. At this time of writing this paper, after two months have elapsed, he is still only weakly positive to tuberculin, but he is definitely tuberculous. April 14, roentgenoscopic examination gave evidence of a small effusion. This was permitted to remain and increase in amount for the following five days. Then roentg noscopic and physical examination gave evidence that a massive effusion had occurred, and the dog was obviously ill and its respiration embarrassed. Of this watery, straw-colored, serous fluid of specific gravity 1.015, 350 c. c. was removed from the right pleural space and was preserved for examination of cellular characteristics and for presence of evidence of phagocytosis of bacilli of tuberculosis. The fluid did not clot on standing. It was sterile for pyogenic organisms, and on examination of stained smears the cytologic picture was found to be composed of 56.5 per cent of polymorphonuclear cells, 6 per cent of mononuclear cells and 37.5 per cent of lymphocytes. Examination of the nuclei of the polymorphonuclear cells disclosed very definite evidence of a shift to the left, probably indicative of rapid formation or immaturity. Leukocytes numbered 4,700 in each cubic millimeter of the fluid. In the blood, leukocytes numbered more than 30,000 in each cubic millimeter of blood.

When smears were prepared and stained by the Ziehl-Neelsen method, a few of tde polymorphonuclear cells were seen to contain occasional bacilli of tuberculosis, but every mononuclear cell exhibited very strong phagocytosis and was literally packed with bacilli of tuberculosis.

This experiment was designed to simulate as

closely as possible cases of tuberculous pleural effusion of rather brief duration. Polymorphonuclear leukocytes dominated the cellular picture, phagocytic activity was most evident in the mononuclear cells, and the percentage of lymphocytes was three times as high as in the circulating blood. The fluid was serous, of low specific gravity, and contained very little fibrin.

Experiment 3.—In December, 1931, a rabbit was injected intravenously with an emulsion of bacteria grown from urine of a human being. Three months later, when it was known to be sensitized, it received an intrapleural injection of 1 c.c. of an emulsion of living bacilli of tuberculosis of bovine type (No. 1146 Feldman's strain). The day following, it was examined fluoroscopically but no evidence of fluid was found. Small amounts of fluid are so difficult to discover roentgenoscopically in these small animals that a needle was inserted in the pleural space. No fluid was aspirated.

The animal was examined from day to day, and was given another injection six days after the first. The second inoculation consisted of 3 c. c. of an emulsion of bovine bacilli of tuberculosis similar to that used at the first intrapleural inoculation. Immediately after injection, the animal was examined fluoroscopically, but no fluid could be discovered. One hour later it was killed, and necropsy was performed at once.

The pleural space on the right side was moist, and on the parietal pleura small agglutinations of fibrin could be seen, appearing as yellowish white clots that probably represented the results of the previous injection. A certain degree of inflammatory reaction was apparent, with a rather sticky exudate covering the costal as well as the visceral pleura and the mediastinal tissues, but the amount of fluid was extremely small. There was much less than 1 c. c. in both pleural spaces. There was, however, enough so that a coll count could be made and smears prepared for histologic purposes. The cell count of the exudate was extremely interesting. The total number of leukocytes was only 12,600 in each cubic millimeter, and the differential count was as follows: polymorphonuclears, 71 per cent; small lymphocytes, 17 per cent; large lymphocytes, 8 per cent; mononuclears. 4 per cent. Examination of the nuclei of the polymorphonuclear cells disclosed that the shift was to the left. Smears were made from the thick, seropurulent, blood-stained effusion. On examination of smears stained by the Ziehl-Neelsen technic, some striking pictures were obtained. All of the bacilli of tuberculosis were phagocytosed. None was found free on the smear. Two types of phagocytic cells were observed; namely, the polymorphonuclear and the mononuclear, and the former predominated in numbers. It was apparent that the polymorphonuclear cell had phagocytosed fewer bacilli than the mononuclear cell, and that, even within the period of time of the experiment, they had already begun to disintegrate. Many fragile broken forms were seen. The mononuclear cells, in many instances, were literally packed full

of bacilli, whereas those which seemed to be free of bacilli had phagocytosed fragments and large portions of broken up polymorphonuclear leukocytes. When smears were stained with Wright's stain, and examined microscopically, one could actually see within the mononuclear phagocytic cell the form and substance of the polymorphonuclear nucleus, as well as the granular substance that is found in its cytoplasm. Evidently phagocytosis was an extremely rapid process, making possible quick disappearance of the bacteria from the pleural surfaces. The mechanism seems the same as that which is employed with inorganic substances. There is immediate polymorphonuclear leukocytosis, early disintegration of the cell, and very active mononunuclear phagocytosis of both bacilli and cellular debris.

The microscopic appearance of the lung and visceral pleura was of particular interest because of the presence of adherent exudate, and of one cellular accumulation that appeared to represent a tubercle in the process of development. The exudates were composed of mononuclear phagocytic cells, and of polymorphonuclear cells which occasionally give evidence of phagocytosis of bacilli of tuberculosis. In the mononuclear cell the phagocytic action was particularly active, and many of these cells were literally crowded to the point of rupture with bacilli.

In that small bit of exudate that had taken on a spheric form, the cellular elements were similar to those already described, but a concentric arrangement had begun. The outer zone consisted of small mononuclear cells which appeared to be lymphocytic in character; the inner zone was made up of mononuclear cells of epithelioid appearance, but they had retained their phagocytic function. No central necrosis or giant cells were present, but the appearance was essentially that of the typical histologic tubercle which had grown on and become an integral part of the visceral pleura.

Experiment 4.—An agouti was treated in the same way as the rabbit. It was sensitized, and its pleural space was inoculated with the same strain of hacilli of tuberculosis. For more than a month, repeated examinations failed to give evidence of any pleural disease, but, five weeks after the initial intrapleural injection, opacity was observed roentgenologically and it became certain that fluid was collected in the pleural space. The animal was killed after four weeks more had passed, giving time for the pleural effusion to develop characteristics of a chronic process, especially from the cytologic standpoint. The animal was found to have a massive bilateral effusion, associated with a very advanced type of tuberculosis of the pleurae, mediastinum. lymphatic structures. The fluid filled both sides of the thorax, causing the upper lobes of the lungs to be atelectatic and in collapse. It was of serosanguineous type and clotted promptly. Cellular elements were few in number, and the differential count was as follows: polymorphonuclear cells. 37.5 rer cent; mononuclear cells, 7.5 per cent; eosinophils 1 per cent and lymphocytes 59 per cent, Few bacilli

could be found on examining the smears made from the exudate. An occasional mononuclear cell contained phagocytosed bacilli, but only one polymorphonuclear cell that exhibited phagocytosis was found. It contained only two bacilli of tuberculosis.

## THE MECHANISM OF PRODUCTION OF THE SENSITIZING TUBERCULOUS LESION IN MAN

The question regarding the necessity for sensitization previous to formation of effusion has been studied by Petroff and Stewart, Corper and Rensch, Krause and other workers. There seems to be an agreement in fundamental conceptions but not in results under the conditions of their experiments. In my uncompleted work, using both sensitized and nonsensitized animals, effusions or exudates have been produced as a sequel to the introduction of living organisms into the pleural space in every case. In man, after reaching young adult life, no great concern may be felt regarding the question of sensitivity. Almost all have been sensitized, and, in all probability, sensitization has been repeated time after time throughout life. It is probable that bacilli of tuberculosis are introduced into the body of man repeatedly, and that no one escapes. The nature and physical characteristics of the lesion, however, are variable, sufficient or not to cause subjective sickness, and sufficient or not to be demonstrable. Fundamentally, however, the unit or tubercle is the same, and represents the reaction of tissue to invasion by a foreign irritant.

This reaction is a standard one and in principle the same regardless of the irritant. When a suspension of graphite is placed in the mouth of an anesthetized dog and aspirated into the lung by the force of inspiration, it sets up the mechanism of defense at once. The reactions within the lung are almost the same as those described as taking place in the pleura. There is a notable exception. In the pleura, the first phagocyte to appear after permeability is increased, is the polymorphonuclear cell. In the lung, the "alveolar cell" seems to be the first and most active phagocyte. It is already at the site of irritation and does not require mobilization from circulating fluid. The polymorphonuclear promptly succeeds and assists the alveolar histocytes, and later the histocytes of the parenchymal connective tissue appear. The reactions are swift and certain. Within forty minutes after introduction of various kinds of particulate-matter into the mouth of a dog, I have found it phagocytosed by all of the cellular forms described, an alveolitis established throughout the parenchyma of the lung, and an accumulation of polymorphonuclear cells and nongranular mononuclear cells, all laden with engulfed particles, lying in the farthest reaches of the lung, in the subpleural spaces.

When using silica as the irritant, these same reactions have occurred within a few hours, and within a week nodulor masses histologically similar to tubercles, have made their appearance. They are made of the same cytologic elements as those produced by the bacillus of tuberculosis and are to be found throughout the lung and reach the periphery. Many appear to be covered only by the thin pleural membrane.

The reaction of the bacillus of tuberculosis is fundamentally the same when it produces its tubercle and establishes thereby a state of sensitiveness to reinfection. One cannot fail to recognize the progressive cellular changes and their conformity with a fundamental scheme of defense.

Gottlieb, studying the reactions of the peritoneum of guinea pigs, to invasion of virulent organisms from a strain of bacilli of tuberculosis derived from man, concluded that the monocytic reaction in a tuberculous infection should be considered at least as an attempt at protective mechanism.

Long, Vorwald and Donaldson studied the reactions of virulent bacilli of tuberculosis after injecttion into the testes of normal and tuberculous guinea pigs. They observed: "Between twenty-four and forty-eight hours after the inoculation with live bacilli, a gradual replacement of the polymorphonuclear leukocytes by large mononuclear exudate cells occurred in all animals. Extensive phagocytosis of polymorphonuclear leukocytes by large mononuclears took place." After seventy-two hours, they observed that the familiar picture of scattered, early tubercles composed of mononuclear cells was present, and that with maturity, or after about two weeks, these large mononuclear cells took on themselves the appearance of typical epithelioid cells. This is what Higgins and I observed when using silica as the irritant. However, there was this difference. Long, Vorwald and Donaldson found that already-present tuberculosis greatly accelerated the reaction capacity of the polymorphonuclear leukocytes, and that previous inoculation, even with dead bacilli, brought about a similar allergic state although the acceleration and increased intensity of inflammatory reaction over that seen in the normal unimal are not nearly so great as in the truly tuberculous animal.

Vorwald's conclusions were substantially the same, although he emphasized the early reaction of polymorphonuclear leukocytes as the initial cellular response to a moderate dose of bacilli of tuberculosis.

Cunningham, Sabin, Sugiyama and Kindwall, Cunningham and Tompkins, and Lurie and Krause have considered the relative importance of the polymorphonuclear cell and of the mononuclear cell. It is probably correct to infer from all the studies now available that the disease set up by the bacillus of tuberculosis is chronic, and that the specific lesion is a new growth of mesenchymal elements of which the most significant cell is the mononuclear cell, which in time matures into the epithelioid cell, and, when active development and division of bacilli is stopped, giant cells make their appearance, and are derived from the epithelioid cell. This typical lesion results in all organs and in all the varieties of animals employed, whenever tuberculous infection exists. Fried has shown the extreme speed of the reaction of pulmonary tissue against bacilli of tuberculosis. He stated: "Infection of rabbits with the bovine type of tubercle bacilli by way of the trachea, provokes an instantaneous reaction in the lungs. The early lesion, that is, 'the primitive tubercle' is found in the lung within five minutes after aerogenous infection."

Petroff and Stewart have studied the allergic reactions of sensitized animals, which, judging from Paterson's work, seem to be required before introduction of living organisms into the pleural space can so disturb permeability as to permit of initiation of a train of defensive phenomena resulting in formation of an effusion. They realize that it was impossible to carry out on man experiments similar to those employed with animals, in which controls usually can be obtained. As a resut of their investigations, however, they concluded:

"1. That virulent human tubercle bacilli in fine suspension in gum saline (7 per cent acacia in physiologic saline) solution injected intrapleurally on the right side into normal rabbits, tend to clump and form clusters of tubercles especially toward the lower or anterior portions of the right pleural cavity and on the right lung and toward the mediastinum.

"2. That there does not seem to be any difference in the gross final results of the intrapleural injection of the living virulent human tubercle bacilli, regardless of whether the rabbits have received either a subcutaneous or an intravenous (sensitizing) injection of the same culture.

"3. That in rabbits there is no more tendency to form pleural effusions or an empyema following the intrapleural injection of virulent (for guinea pigs) human tubercle bacilli in those animals having received either a subcutaoeous or an intravenous injection of the same culture of tubercle bacilli one

month prior to the intrapleural injection, than in a normal rabbit not having received such preliminary sensitizing injection; thus making it impracticable to use this method in the rabbit for the production of tuberculous effusions or empyemas for experimental therapeutic or other studies."

### IMMUNITY IN MAN

In Sewall's brilliant essay on the psychic analogues of allergy, he wrote: "When a foreign protein comes in a contact with the tissue cells of a normal organism, these become irritated and enter upon a cycle of unwonted metabolic change, the results of which appear in a week or two. The first of these results is a specific hypersensitiveness toward the foreign protein in question so that thereafter infinitesimal quantities of the latter may be able to irritate the cells. Experiment has made it obvious that the acquirement of specific sensitization goes hand in hand with the development of extraordinary powers within the tissue cells for rapid destruction, digestion or neutralization of the offensive foreign protein."

With these words he introduced his discussion of and distinction between immunity and allergy. He made the distinction more clear when he wrote: "There are doubtless several ways by which the biological status of immunity may be attained, but only one concerns us here-that, namely, in which the foreign protein or 'antigen,' as it is called, on entering the normal body has been able in the course of a few days to excite the latter to develop essentially new vital power objectively witnessed by specific hypersensitiveness and defensive antibody reactions. The normal body which has undergone such a course of cellular training is now said to be 'immune' toward that particular antigen or microbe which started the disturbance. It is characteristic of the immune state that the body which has acquired it responds at once with defensive reactions calculated to inhibit or destroy the irritating antigen whenever thereafter the latter makes a new invasion. . . . . Allergy implies a defensive reaction against a particular antigen in a prepared subject."

There is, therefore, a most intimate relationship between immunity and allergy. Willis summarized the laws dealing with specific immunity to tuberculosis, as follows:

"(1) There is no specific immunity without preexisting tubercle; (2) immunity first appears with the palpable development of the focus; (3) it diminishes with the healing of the focus; (4) it disappears with the enucleation of the focus; (5) the degree of immunity varies directly with the virulence of the immunizing micro-organism, or, otherwise expressed, with the amount of tubercle and activity of the lesion in the host.

"As regards allergy, we find that: (1) it is never observed unless tubercle is present; (2) it appears coincidentally with the establishment of lesion; (3) it diminishes as lesion heals; (4) it varies directly with the intensity of the disease, which, in turn, is dependent, not wholly but in large measure, on the virulence of the bacilli concerned."

Krause summarizes his opinion regarding immunity and allergic reactions by saying: "In every established tuberculous infection, we may think of every increase of intrafocal tubercle bacilli, or every conveyance of bacilli beyond their focal bounds, as met by allergic reactions. In the vast majority of countless instances the number of bacilli concerned are too small to lead to appreciable or sensible effects. Their fixation, immobilization, and perhaps partial or complete destruction, are accomplished This end result is conceived by us as immunity."

When bacilli are suddenly discharged on allergic tissue such as the pleura made sensitive by previous infection, the response is characterized by acute inflammatory reactions and changes in permeability so that fluid may be formed and a pleural effusion produced. The degree of inflammatory reaction is variable, it may produce only malaise, or it may, suddenly and without warning, cause florid symptoms of alarming intensity.

Such accidental conveyance of bacilli from a tuberculous focus to the sensitized pleura of man, may occur on one occasion or repeatedly in the course of disease, and the severity of the allergic reaction may bring about an insidious or an abrupt onset of illness, either of mild degree or of fulminating character with the production of effusions containing variable cellular constituents. Those containing at the onset of the effusion the largest number of red blood cells and of polymorphonuclear cells, usually seem to be an expression of the most intense allergo-immune action, and are found when the illness is of severe and dangerous character.

### EVIDENCES OF INFECTION IN MAN

When Corper and Rensch repeated Paterson's work, they were unable to confirm his findings; namely, that normal animals failed to develop pleural effusions when given intrapleural inoculations of bacilli of tuberculosis, while such injections into tuberculous guinea pigs resulted in exudation of serum, of leukocytes, of erythrocytes, and of fibrin. Corper and Rensch have expressed the same belief as that which I hold; namely, that there is available no

method which can ben relied on to produce a replica of the condition found in man. From clinical observation, serologic reactions, and pathologic examination, however, it seems reasonable and proper to believe that pleurisy with effusion in man occurs only in such persons as have been previously sensitized, or, in other words, as are immune. The pleurisy and the effusion are the visible evidences of allergy.

There is only one conflicting bit of evidence. If there is truth in these conclusions, then the anatomic changes in the pleura resultant on secondary infection, should be accompanied by symptoms as well as local reactions of inflammatory type. This is almost always true; pain, fever, malaise, and effusion constitute the syndrome. But McPhedran wrote: "Small and moderate effusions are not uncommonly discovered in routine serial roentgenographs of children living in contact with sputum-positive tubtrculous persons. Below the age of puberty, these lesions in white children may appear and clear without symptoms or elevation of temperature and without the later development of pulmonary infiltration. In colored children of this age period, effusions are more often accompanied by dense pleural thickening and infiltration of the lung that produce symptoms." Montgomery found costophrenic adhesions, on roentgenologic examination of Canadian Indian children, in about 30 per cent of cases. These gave no history suggestive of tuberculosis, although 100 per cent had contacts with tuberculous relatives. Either, among children, the effusion may represent a first infection, which is improbable, or the symptoms produced are so mild as to make detection impossible.

The significant facts regarding immunity and allergy, however, have been stated by Hetherington, McPhedran, Landis, and Opie, in their report on the incidence of tuberculosis among children attending the schools of a large city. By studying the reaction to tuberculin, they found that infection occurred before the fifth year in 80 per cent of the children

of families in which a member had open tuberculosis, and in only 20 per cent of the children of families not harboring a source of contagion. These figures emphasize the danger of intimate contact. But intimate family life among those harboring members having open lesions is not necessary, because, among families free of disease, the positive tuberculin reaction increased gradually from zero in infancy to almost 100 per cent at the age of twenty years. In a further survey to determine the prevalence of tuberculous infection in school children, they were able to make the following report:

- "(1) Tuberculin tests of school children of Philadelphia show that 37.7 per cent are infected with tuberculosis at the age of five years, and 90.2 per cent at the age of eighteen years." These figures indicate that there has been no significant diminution of the incidence of tuberculous infection during childhood to correspond with the diminution of mortality from tuberculosis in recent years.
- "(2) Pulmonary tuberculosis recognized by roentgen examination in association with symptoms and physical signs, is found in 0.5 per cent of children attending school, being more frequent in high-school children than in children of elementary schools.
- "(3) Latent tuberculous infiltration of the lung of childhood type, was found in more than 1 per cent of the children. The lesion may be the precursor of grave disease.
- "(4) Latent tuberculous foci in lungs and tracheobronchial lymph nodes are found in more than 10 per cent of the school children. It may be the precursor of pulmonary tuberculosis."

Hewitt and Cutts completed their recent inquiry regarding the incidence of tuberculosis among high-school students of a small city, and compiled the following table:

### SUMMARY OF RESULTS

		Tuberculin tests				Roentgenograms			
		Given		Positive		Made		Positive	
			Per	Num-	Per	Num-	Per	Num-	Per
	Students	Number	cent	ber	cent	ber	cent	ber	cent
Entire student body	1,565	1,328	84.2	154	11.5	152	98.7	23	15.1
Submitted to intensive study	54	54	100.0	24	44.4	47	77.0	7	14.8
Known to have been exposed									
(part of group of 54)	34	34	100.0	21	61.8	34	100.0	3	8.9
Gave physical signs that arous-									
ed suspicion (part of the									
group of 54)	20	20	100.0	3	15.0	20	100.0	4	20.0

Their summary and conclusions are: "Of 1,328 high-school students, 11.5 per cent gave positive reactions to the Mantoux test. Of thirty-four students definitely known to have been exposed to open tuberculosis, 61.9 per cent gave positive reactions to the tuberculin test. Lesions disclosed roentgenologically were few in number and not extensive. In the general group, 15.1 per cent of those who gave positive cutaneous tests also gave roentgenologic evidence of some abnormality which might be attributed to tuberculous infection. Primary tubercles were present in thirteen cases. Of those who had been in contact with patients who had tuberculosis, 8.9 per cent gave roentgenologic evidence of lesions attributable to tuberculous infection. No case of active or extensive latent tuberculosis was found. However, evidence of tuberculous infection was disclosed. That its most serious menace is to those who live in homes where infection is present, is shown by the much greater percentage of positive Mantoux tests among students from such homes as compared with the lower percentage of positive tests found in the group as a whole."

Unquestionably there are differences in the incidence of tuberculosis in different localities, and when conditions of life vary; yet the literature is full of evidence of the universality of the infection. The evidence is supplied not only from the allergic reaction to tuberculin, but also from the anatomic studies of pioneer investigators of primary disease, of whom Ghon and Opie and Hodenpyl are outstanding. They described the primary lesion as a focus lying in the substance of the lung, often near the pleural boundary, and not more frequent in the apex than elsewhere. Evidence seems to show that these lesions increase in number from above downward, and are more commonly found in the lower than in the upper lobes. They are accompanied by more extensive lesions in the adjacent lymph nodes, which, like the pulmonary focus, may pass through stages of caseation, fibrosis, and calcification. Calcification especially makes it possible to visualize the lesions roentgenographically, and thus to show the frequency of their appearance among apparently normal persons. The evidence of calcification is so commonly seen as to escape comment. Farrel studied the incidence of calcified pulmonary foci and found the following: (1) of 1,034 adult patients whose chests were examined roentgenographically, 801 (77.46 per cent) presented evidence of a primary effect, or of a calcified reinfection; (2) of this group, 750 (72.93 per cent) presented primary effects; and (3) the lower portion of the right lung, the portion which is best aerated, exhibited the highest incidence of calcified foci.

Blocklock recently summarized his opinion regarding the primary lesion in the lungs of children. His data were drawn from 1,800 consecutive postmortem examinations of children whose ages ranged from a few hours to between 12 and 13 years, and who lived in Glasgow and the west of Scotland. Tuberculous lesions were found in 283 subjects (15.7 per cent). The lungs or tracheobronchial lymph nodes were the seat of tuberculous lesions in 173 (61.1 per cent) of the total number of tuberculous patients, and, of these, 168 (97.1 per cent) died as a result of the tuberculous disease. A primary pulmonary lesion was found in 148 of the cases in which the primary site of infection was classified as being in the thorax. The primary pulmonary lesion consisted of a localized patch of caseous broncho-pneumonia, and in the great majority of cases was single. Calcification of these lesions was unusual, and in only about a third was there evidence of surrounding fibrosis, the incidence of which increased with the age of the children. Most of the primary pulmonary lesions were subpleural in position, and the right lung was more often the seat of such lesions than the left; the right upper lobe was most frequently involved, and then, in order, the right lower, left upper, left lower, and right middle. Tuberculous adenitis involving the tracheobronchial nodes was related, both anatomically and pathologically, to the primary lesion in the lungs; involvement of the nodes was secondary to the pulmonary lesion. In twentyfive of the cases in which primary infections were considered thoracic in situation, pulmonary lesions were not found. In a series of cases in which the type of infecting organism was investigated, 173 human and three (2.7 per cent) bovine strains were found in cases in which the primary site of the infection was in the thorax. Only human strains were obtained in cases in which there were primary pulmonary lesions. These features were in marked contrast to those found among children in the same series, with the primary site of infection in the abdomen; among these children 81.8 per cent of the infecting bacilli were of the bovine type; also, in cases of bone and joint tuberculosis, which were caused by blood-borne infection, 34.6 per cent of the causal organisms were bovine strains. From the pathologic and bacteriologic evidence, Blacklock concluded that the focus described as the primary pulmonary lesion is indeed such, and that it is due to direct infection of the lung through the air passages.

Evidence of the presence of a lesion is conclusive

and objectively demonstrable in a high percentage of all cases in which the patients are adults, but the speed with which the lesions have developed is not emphasized. There are three considerations that require comment. The first recalls the work of Fried, who found, as stated before, that formation of a tubercle was an almost instantaneous process, and was completed in the brief period of a few days. This work received confirmation by work now in progress by Higgins and me; we can produce a similar cellular nodule with inorganic material, silica, in the same time and with the same cellular reactions and constituents. The second consideration also recalls previous work. Higgins and I were able to produce immediate and similar pulmonary changes by introduction of colloidal iron into the trachea, and within an hour we were able to demonstrate phagocytosed colloidal iron in the adjacent tracheobronchial lymph nodes and to note the tissue reactions it produced in them. Within an hour and a half, we were able to demonstrate phagocytosed particles of graphite in the most distant of the paratracheal lymph nodes, following intratracheal inoculation of a colloidal suspension.

Finally, there is evidence that the mechanism is not confined to inert inorganic substances, or to pathogenic bacteria which produce a similar chronic new growth of connective-tissue cells, but includes also the acutely virulent pyogenic organisms. Robertson recently examined at necropsy a baby ten hours old that had required artificial respiration, and found definitely demonstrable bronchopneumonia, and a reaction within the adjacent lymph nodes, including not only polymorphonuclear leukocytosis, but also hyperplasia of reticular cells.

It is possible to conclude that sensitization in man is the result of infection with the bacillus of tuberculosis, which excites an immediate response, and sets in motion a defense mechanism that is not specific for tuberculosis but is employed for all invading substances, although subject to variations required by such differences as may be included in the terms of dosage and virulence. It would seem that the initial lesion, a tubercle, is an immediate reaction, that involvement of the adjacent lymph nodes becomes possible by employment of the lymphatic vessels required for disposal of all removable organisms, and that the phagocytic defense is supplied, first, by polymorphonuclear leukocytes which are soon displaced by mononuclear cells, and that these become the characteristic cells of tuberculosis.

It would appear that, in man, sensitization by the presence of tubercle is also universal, and that all

cases of pleural effusion seen in man are evidences of imbalance or increased permeability, made possibly by the reactions of bacteria or by the products of bacteria on a sensitized pleura.

#### BIBLIOGRAPHY

- 1. Blacklock, J. W. S.: The primary lung focus of tuberculosis in children. Proc. Roy. Soc. Med., Sect. Path. 25:725-733 (Jan. 19) 1932.
- 2. Corper. H. J.; and Rensch, O. B.: An attempt to produce experimental tuberculous effusions and empyemas in rabbits. Am. Rev. Tuberc. 4:756-762 (Dec.) 1920.
- 3. Cunningham. R. S.; Sabin, F. R.; Sugiyama, S.; and Kindwall, J. A.: The role of the monocyte in tuberculosis. Bull. Johns Hopkins Hosp. 37:231-280 (Oct.) 1925.
- 4. Cunningham, R. S.; and Tompkins, E. H. The white blood cells in human tuberculosis as studied by the supravital technique. Am. Rev. Tuberc. 17: 2 4-239 (March) 1928.
- 5. Farrell. J. T., Jr.: The incidence of roentgenographically observed calcified pulmonary foci and their significance; a study of 1,034 patients. Am. Rev. Tuberc. 18:344-359 (Sept.) 1928.
- 6. Feldman, W. H.: Personal communication to the author.
- 7. Fried. B. M.: The infection of rabbits with the tubercle bacillus by way of the trachea. Arch. Path. 12:689-714 (Nov.) 1931.
- 8. Ghon, Anthon: The primary lung focus of tuberculosis in children. New York. P. B. Hoeber, 1916, 172 pp.
- 9. Gottlieb, R.: The monocytic reaction in tuberculos's. Am. Rev. Tuberc. 25: 172-177 (Feb.) 1932.
- 10. Hetherington. H. W.; McPhedran. F. M.; Landis. H. R. M.; and Opie. E. L.: A survey to determine the prevalence of tuberculous infection in school children Am. Rev. Tuberc. 20:421-510 (Oct.) 1929.
- 11. Hewitt, Edith S.; and Cutts, R. E.: The incidence of tuberculous infection among students of a high school. Am. Rev. Tuberc. 25:525-532 (April) 1932.
- 12. Higgins, G. M.; and Lemon, W. S.: Absorption from the pleural cavity of dogs. I. The cytologic aspect. Am. Jour. Med. Sc. 181:697-710 (May) 1931.
- 13. Hedenpyl. Eugene: Miliary tuberculosis of the pleura without other tuberculous involvement of the lung. Med. Rec. 55:903-907 (June 24) 1899.
- 14. Krause, A. K.: A few observations on immunity to tuberculosis. Am. Rev. Tuberc. 6:233-237 (May) 1922.
- 15. Krause. A. K.: Immunity and allergy in the pathogenesis of tuberculosis. Tubercle. 10:22-29 (Oct.) 1928.
- 16. Long, E. R.; Vorwald. A. J.; and Donaldson, L.: Early cellular reaction to tubercle bacilli. Arch. Path. 12:956-969 (Dec.) 1931.
- 17. Lurie, M. B.: The correlation between the histological changes and the fate of living tubercle bacilli in the organs of tuberculous rabbits. Jour. Exper. Med. 55:31-54 (Jan.) 1932.

- 18. McPhedran, F. M.: Pulmonary tuberculosis of childhood and adolescence and its differential diagnosis. Canad. Med. Assn. Jour. 20:476-481 (May) 1929.
- 19. McPhedran, F. M.: The diagnosis and classification of pulmonary tuberculosis in childhood and adolescence. Am. Rev. Tuberc. 20:532-636 (Oct.) 1929.
- 20. McPhedran. F. M.: Tracheobronchial lymphadenitis and its associated lesions. Twenty-first report of Henry Phipps Institute. University of Pennsylvania. 1929, pp. 1-5.
- 21. Montgomery, Hamilton: Personal communication to the author.
- 22. Opie, E. L.: The transformation of sero-fibrinous into purulent pleurisy. Jour. Exper. Med. 2:414-427. 1907.
- 23. Paterson, R. C.: The pleural reaction to inoculation with tubercle bacilli in vaccinated and normal guinea pigs. Am. Rev. Tuberc. 1:353-371 (Aug.) 1917.
- 24. Petroff, S. A.; and Stewart, F. W.; Immunological studies in tuberculosis. III. Concerning the allergic reactions obtained in animals sensitized with killed tubercle bacilli. Jour. Immunol. 10:677-717 (July) 1925.
- 25. Pinner. Max; and Moerke, Georgine: Pleural effusions, laboratory findings and clinical cortelations. Am. Rev. Tuberc. 22:121-183 (Aug.) 1930.
- 26. Robertson, H. E.: Personal communication to the author.
- 27. Sabin, Florence R.: Cellular studies in tuberculosis. Am. Rev. Tuberc. 25:153-171 (Feb.) 1932.
- 28. Sewall, Henry: Psychic analogues of allergy. Science. 74:37-39 (July 10) 1931.
- 29. Vorwald, A. J.: The early cellular reactions in the lungs of rabbits injected intravenously with human tubercle bacilli. Am. Rev. Tuberc. 25:74-88 (Jan.) 1932.
- 30. Willis, H. S.: Studies on immunity to tuberculosis. The waning of cutaneous hypersensitiveness to tuberculosis and the relation of tuberculoimmunity to tuberculo-allergy. Am. Rev. Tuberc. 17:240-252 (March) 1928.

## TUBERCULOUS PLEURISY WITH EFFUSION.

II. The Clinical Aspect.

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Elsewhere, an attempt has been made to trace the complex reactions of the body against invasion of inert foreign particles, and to compare these with the mechanism of defense against the bacillus of tuberculosis. It has been my opinion that the experimental animal and man have a common mechanism of defense, which includes such factors as tissue permeability, phagocytosis, lysis, resorption, immunity, and allergy. In experimental work, I have been led to believe that this common defensive mechanism is employed, in part or in whole, regardless of the type of irritant, but that variations occur which seem to be due to characteristics that are not the common property of all the irritants. In this category may be included such variables as dosage and virulence of organisms.

In the reactions of the pleura of man against the bacillus of tuberculosis, the question of the importance of previous infection was considered, and evidence both for and against the necessity of previous sensitization was considered in relation to the question of formation of pleural fluid. When this evidence was considered from clinical, serologic, and experimental evidence, it seemed possible to conclude that all the tuberculous effusions of man which occur in adult life appear in those who have had antecedent inoculation with bacilli of tuberculosis, although they may never have been conscious of the infection, nor ever had been made ill as a result of it. It is conceded that the formation of pleural effusions is an accident in the course of the disease, occurring with relative infrequency, and produced by circumstances that are not subject to control. The use of pneumothorax in treatment seems to supply the circumstances or factors of necessity more often than any produced by the disease itself. The inconstancy and unexpectedness of occurrence runs a parallel curve under experimental conditions.

### THE INCIDENCE OF PLEURISY WITH EFFUSION

The physical construction of the lung is such that all diseases affecting the parenchyma should also affect the visceral pleura. Thus, reactions of inflammatory type frequently resulting in effusion should be common sequelae of pulmonary disease, whether primary in origin or secondary to disease elsewhere in organs such as the heart, kidneys, or liver. It is common clinical experience that such result obtains. Fluid is usually present in large or small amount in case of pneumonia, pulmonary infarction, cardiac decompensation, hepatic cirrhosis or subphrenic abscess.

The relative frequency of that form which can be definitely proved to be tuberculous must, however, be estimated by anatomic investigation. Two methods are in common use. In The Mayo Clinic, specimens for biopsy are often obtained, and this method results in discovery of a varying percentage of diagnoses of tuberculous pleurisy among patients

with chronic empyema who come for surgical treatment. The percentage of the tuberculous variety is approximately 15, but may in certain series of cases approach 20. In the years following the epidemic of influenza, it dropped to 5 per cent of all cases referred for surgical treatment. Examination of records of necropsy is the other anatomic investigation that can be expected to give accurate information of etiologic factors. Certain reservations must be made. Such reports as come from institutions that do not accept cases of tuberculosis cannot give a true report of the incidence of pleural infection. The cases of tuberculous pleurisy would be in too small proportion, just as the proportion would be too large if determined from records of necropsy made in an institution devoted to the special care of the tuberculous.

Osler's statistical data were obtained from a medical service varying in size from seventy to ninety beds, and on which all types of cases were accepted. He studied 101 cases of pleurisy, and found that thirty-two were definitely tuberculous. This diagnosis was based on the presence of histologic tubercles found in the pleural layers. tubercles appeared as miliary granulations, caseous masses, or tubercles in which evidence of fibrous change had developed. Of his thirty-two patients, eight had purulent exudate, all in association with pneumothorax; two had hemorrhagic fluid; seven had fibrinous or serofibrinous exudates, and were incidental to acute miliary tuberculosis; four had purely fibrinous exudate and were instances of acute miliary tuberculosis, thirteen had chronic serofibrinous exudate with associated pleural thickening; and four had serofibrinous exudates that were encapsulated. His statistics indicated that fibrinous or serofibrinous effusions were the most frequent, that both purulent and hemorrhagic fluids occurred under certain circumstances in the course of the disease, and that tuberculosis produced about 30 per cent of all pleural effusions.

### THE INCIDENCE IN EARLY LIFE

Theoretically, one would expect an extremely small percentage of cases of pleurisy with effusion among patients younger than five years. This is the age of asymptomatic inoculation, and is too early for the mature forms of parenchymal or progressive disease. In special groups of children, including Indians and negroes, such as those reported by McPhedran and his associates, and by Montgomery, the incidence approaches the higher percentages of adult life. Dickey and Garland com-

mented on the rarity of serofibrinous pleurisy among young children until after the fifth year, and quoted from the literature evidence to the effect that those who have effusion have a better chance for recovery than do adults with the same condition. The subsequent development of tuberculosis seems, from this report, to be less frequent among children than among adults. Dickey and Garland made about 700 roentgenograms of 327 children who gave positive reactions to tuberculin, and found an incidence of 71.5 per cent of pleural lesions, but only 3.3 per cent of pleural effusions. They quoted reports of the incidence of pleural effusion among 2,070 adult patients who had tuberculosis, in which the incidence of effusion was only 3 per cent. It would appear that among the tuberculous the incidence of effusion is not materially different in different one groups. Osler believed that tuberculosis and counted for 30 per cent of all cases of pleurisy; Dickey and Garland reported evidence to show that, among tuberculous persons, pleural effusions occur in an incidence of 3 per cent.

#### MATERIAL

In this paper comment on the clinical manifestation of pleurisy with effusion will be restricted to three groups of cases. Group 1 was composed of twenty cases, in all of which the effusion was proved to be tuberculous by inoculation of guinea pigs. Group 2 was made up of twenty cases, believed to be satisfactorily diagnosed although proof of tuberculous effusion was not absolute; in 50 per cent of these, reports of inoculation of guinea pigs were positive, in 20 per cent, reports of inoculation of guinea pigs were negative, and in 30 per cent the inoculations failed to give positive evidence because of the premature death of the guinea pigs. Group 3 was composed of 126 cases in which examination was made at the clinic and on which Gaarde reported two years ago.

Group 2 included only patients who have been under my personal observation and supervision for from three to ten years. I saw the subjects of group 1, also, but either not for so long a time, or else only in consultation.

The division into groups will be employed only when contrasting differences in end results. All groups are too small to be employed for statistical purposes. Among the 166 cases in the three groups there were no significant differences in the antecedent histories, in the progress up to the time of examination, in the character of the effusion, or in the known presence of antecedent tuberculosis.

None of the patients had active, demonstrable, pulmonary tuberculosis on admission. The effusions were all spontaneous, of primary type; they were not secondary to pneumothorax or traumatism, and were, with few exceptions, of simple serous type. It was found difficult to describe the effusion exactly, or to divide them into serous, scerofibrinous, hemorrhagic and purulent types, and no such sharp distinction will be employed. Reference will be made, however, to certain cases in which hemorrhagic or purulent characteristics seemed to predominate, and to be the result of certain variations in the severity of the disease.

The description of types which follows obviously has no relation to the division of the material into groups. Any one type may include cases of all groups.

GENERAL DESCRIPTION OF FOUR TYPES OF CASES Acute tuberculous pleurisy with effusion, with subsequent chronic course or return to normal health (type 1).—In this type have been included cases which seemingly began without antecedent illness and without known infection previously existing in the lungs or pleura. Ten of the forty cases began acutely; pain in the side, chill, and fever were the initial symptoms. Exposure did not seem to be the exciting cause. The illness was as abrupt in onset as lobar pneumonia and in several instances the first diagnosis was pneumonia or influenza. The pain was acute, lancinating, increased with respiratory movement, was productive of shallow, rapid, guarded breathing, and required voluntary protection by pressure. It was introduced or accompanied by chilliness, or even by distinct rigor. Cough developed that usually was nonproductive, especially at the onset, and that later was productive of a small amount of mucoid sputum. Fever began abruptly and was of intermittent type and with morning and afternoon variation from 98° to 104° F. Usually, throughout the long course of acute symptoms, the curve of temperature lay between 100° F. in the morning and 103° F. in the afternoon. Two of my patients had such a fever continuously for the fourteen weeks of their acute illness. The curve of pulse rate corresponded roughly with that of temperature, having a range of 80 to 130 beats each minute and an average of 110. Tachycardia continued for six to eight weeks after the temperature reached normal limits, and the rate was subject to many extrinsic factors. Among the women, both temperature and pulse rate were increased during subsequent menstrual periods, and the pulse rate especially was

caused to fluctuate by such minor influences as fatigue, excitement, or nervousness. Sweating, more or less profuse, and chilliness endured throughout the earlier weeks of the acute illness.

In certain cases, complete studies of blood chemistry were made without finding any very suggestive alterations from normal. In one instance, however, albuminuria and hematuria occurred and studies of the blood were made. Bloor I and II tests for cholesterin gave results that were within normal limits. There was 64 mg. of lecithin in each 100 c.c. of blood (normal 80 to 120 mg. in each 100 c.c. of blood). The value for fatty acids was 222 mg. in each 100 c.c. of blood (normal, 100 to 130 mg.) and for total acids, 399 mg. in each 100 c.c. of blood (normal, 200 to 300 mg.) values for blood urea, serum protein, serum albumin, nonprotein nitrogen, creatinine, chlorides, carbon dioxide combining power were within normal limits. With the subsidence of acute symptoms and the reduction of fewer to normal limits, the albuminuria disappeared.

During the period of acute illness the weight is reduced, often rapidly, varying in degree from 10 to 25 per cent of normal body weight. The reduction seems to be the result, not only of continued fever, but also of the nausea, vomiting, and anorexia that affected those who were most acutely sick. Dyspnea was not a prominent symptom after the initial accumulation of fluid. While the patients were in bed, respirations even of those seriously sick were only 18 to 30 each minute. The rate was rarely more than 30 each minute, even when the temperature was highest and when fluid was present in large amount in the plural space.

With the return of health, these patients of types 1 and 2 gained weight and strength rapidly, a sense of well-being developed, and within a period of six months to a year they were able to return to their normal occupations. The element of time varied greatly, although a year was the average period of observation. In three cases of my series (group 2), observation, however, continued over three to four years. Type 1 included the cases in which the fluid became encapsulated and failed to be absorbed and those in which evidence of pulmonary tuberculosis, tuberculous peritonitis, Pott's disease or urogenital infection developed.

Secondary and terminal acute tuberculous pleurisv with effusion (type 2).—In the last ten years I have observed four cases of this severe type of the disease. Undoubtedly such cases are not very rare, but they do not often come to my attention. They

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are seen most commonly in sanatoriums or by family physicians. The parenchymal lesion was not discovered at the onset of pleurisy in any of the cases.

More commonly, the pleurisy sets in insidiously, and may be the outstanding symptom of illness. The onset, however, may be abrupt, with high fever, severe pain, cough, dyspnea, and rapid accumulation of fluid. There was nothing characteristic about the fluid when first obtained, to indicate that the cases would follow an extremely severe course and terminate fatally.

In three of the four cases, the sickness came abruptly, while health was thought to be excellent, and without any suggestion of pre-existing pulmonary tuberculosis. However, one patient had had a pleural effusion two years previously, and aspiration elsewhere had been performed on five different occasions. In the course of this illness, bacilli of tuberculosis had been discovered in the sputum. This information was obtained from the examining physician long after the onset of the illness. In each of the cases in which the patients had been considered to be free of pulmonary tuberculosis at the onset, positive evidence of infection within the lung appeared previous to death and the course of the disease was rapid and progressive. In one instance the pleural effusion was first of serous type, but later became sanguineous; then axillary and cervical adenopathy occurred, a tuberculous abscess developed over the manubrium, and the pleura itself became enormously thickened. In the second case, renal deficiency appeared during the height of fever, albumin was present in the urine, the value for urea was found to vary from 80 mg. to 132 mg. in each 100 c.c. of blood, the value for creatinine varied from 2.3 to 3.9 mg. in each 100 c.c. and the excretion of intravenously injected phenolsulphonphthalein from both kidneys taken together was 10 per cent in one hour. The course of illness was so suggestive of typhoid fever that tests were employed before excluding this condition in diagnosis. The third and fourth patients followed a course more nearly typical of Osler's description. They responded within a few weeks of treatment, recovering a measure of health, but soon became acutely ill again. The subsequent course was suggestive of milinry tuberculosis; it was always alarming and progressive, and continued until death occurred. One patient died within seven months of the initial sickness and two months after delivery of a baby; the other died one year after onset of the discerned onset of the disease.

Acute tuberculous suppurative pleurisy (type 3). Although artificial, this elassification is adopted for the third type, not because it illustrated any significant difference from other types of severe acute tuberculous pleural effusion, except in the initial development of purulent effusion and in the tendency to a severe course and rapidly fatal termination. Of the six patients who died in my series of forty cases (groups 1 and 2), two had a purulent exudate when aspiration was first performed. Although the etiology is the same, it has seemed that the production of bloody fluid, and of purulent fluid, indicates a severity of reaction greater than when serous effusions are produced, and that such fluid may represent the effect of a severely acute infection, either due to vast numbers of bacteria, or bacteria of unosual virulence.

The onset of the illness may closely simulate pnoumonia, starting abruptly with rigor, severe pain, leukocytosis, and the immediate formation of a purulent effusion, which may contain large numbers of bacilli of tuberculosis. There is no intervening period of normal health following the onset. The disease is acute, alarming from the start, progressive, and continues until death occurs. The two patients who had purulent exudates when aspiration was first performed, mentioned in the preceding paragraph, survived three and four months respectively after the onset of acute symptoms.

Subacute tuberculous pleurisy with effusion (type 4).—This includes a large percentage of all cases, whether of the so-called primary sort in which there was no previous knowledge of a tuberculous lesion, or of the secondary sort, developing among patients having either active or quiescent pulmonary tuberculosis. Fourteen of forty cases were classified in type 4. In sanatoriums, where pneumothorax constitutes one of the most important and frequently employed types of treatment, pleural effusions of this variety are common, and impossible of anticipation. When the lung is collapsed, something occurs, more frequently than under other conditions, to affect permeability and to allow accumulation of fluids. Perhaps accumulation of fluid is due rather to lessening of the resorptive powers of the pleura, or to hindrance of normal drainage through a lung in the state of collapse. It is probable that most fluid is removed through the costal pleura rather than through the visceral pleura, but the influence of collapse on its resorptive ability is rot known.

The patients' illness started insidiously, or became abrupt and acute following a period of malaise. The

period of malaise varied from a week to three or four months, and was characterized by a sense of unnatural weakness, fatigue, and loss of endurance. Sweating occurred without sufficient cause; soreness in the chest, backache, or other neuromuscular types of pain appeared; nervousness, insomnia, headache, and gastro-intestinal symptoms of mild degree developed. These gastro-intestinal symptoms were chiefly loss of appetite, even amounting to true anorexia with a distaste for food, nausea, or even vomiting, and a progressive loss of weight, strength, and sense of wellbeing. Such symptoms usually caused the patient to seek examination; then a temperature of 100° F. or more, a rapid pulse, and evidence of fluid, were discovered.

After three to six weeks in bed, and usually with removal of serous effusion once or twice, health was regained. Often pleural thickening remained for many weeks after fluid had disappeared and occasionally tuberculosis either in the lungs or elsewhere made its appearance. When the pleural thickening was permanent, that side of the chest became flattened, respiratory excursions were limited, and the mediastinal structures were transposed toward the side affected.

In the majority of instances, healing is so complete that at the close of the year during which observation is available, no clinical or roentgenologic evidence remains to suggest the nature of the sickness.

CLINICAL FINDINGS, COMPLICATIONS AND END
RESULTS IN FORTY CASES OF PLEURAL
EFFUSION (GROUPS 1 AND 2)

The final diagnosis of the tuberculous character of these cases has been considered reasonably positive because of laboratory evidence, positive either at the onset of the sickness or later in its course, or because of the subsequent evidence of tuberculosis elsewhere in the body. Inoculation of guinea pigs gave positive evidence in thirty cases. In three of these cases chronic tuberculous empyema developed, associated with pyogenic infection, and positive histologic evidence of tuberculosis on examination of tissue obtained at operation. In two cases, tuberculous peritonitis developed. One patient had subsequent tuberculosis in the epididymis, and one, tuberculosis of the spinal column and hip. Bacilli of tuberculosis were found in the sputum of two patients, and two gave roentgenologic evidence of associated pulmonary tuberculosis.

In the group the members of which have been under my observation and care for from two to ten years (group 2), fifteen of the twenty patients

were less than forty years of age. Their ages varied from sixteen to forty-six years. In group 1, the ages were somewhat higher, varying from fifteen to sixty-five years. Six patients were more than forty years of age and ten less than thirty years of age. Equal numbers of men and women were affected in both groups.

The symptoms constituting the complaint were essentially the same in the two groups and appeared in the following order: fever, pleural pain, cough, dyspnea, fatigue, weakness and loss of weight. These symptoms occurred with equal frequency and were common to all. Loss of endurance, pains in various parts of the body, especially backache, and nervousness, insomnia, gastro-intestinal distress, chilliness, and sweating, comprised the less frequent symptoms. Many antecedent conditions were diagnosed, including all varieties of infection of the upper part of the respiratory tract. These infections included colds, tonsillitis, bronchitis, influenza, and pneumonia, and were believed to be the cause of the illness at its onset. The discovery of a pleural effusion set in motion the procedures leading to a correct diagnosis.

In group 2 the complications encountered were almost exclusively included in disease of tuberculous character elsewhere in the body. Roentgen rays revealed a pleural lesion in all cases, and this lesion remained in evidence for from six months to four years; the roentgenogram is still positive in two cases because of encapsulated fluid, in one of which the fluid is sterile pus and has been known to be purulent for two years. These two patients, however, are well enough to work. Evidence of adhesions was observed in about 50 per cent of the cases of group 2 and an apical lesion developed in two but failed to produce symptoms of active pulmonary tuberculosis. The roentgenogram finally became negative in more than half of the cases. Tuberculosis of the peritoneum, of the organs of reproduction, and of bone, represented the active lesions developing outside the chest. Those of the bone included tuberculosis of the ribs, of the hip joint, and of the vertebrae. In 25 per cent of the cases of group 2 there were recurrences of pleurisy within the first three or four years, but in only one instance did fluid occur on the opposite side. Usually the recurrences were minor illnessess of brief duration, characterized by pain of pleural type. A characteristic friction rub was heard in one instance.

In the comparable group of twenty cases (group 1) the only significant differences were in the severity and seriousness of the complicating disease.

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In two cases active pulmonary tuberculosis developed, sputum was positive, and in one of these death resulted with surprising swiftness. In three patients a more quiescent type of pulmonary tuberculosis developed later, making the incidence of pulmonary tuberculosis 25 per cent. In one case a purulent effusion developed following spontaneous pneumothorax, and in two cases, persistent draining sinuses developed, succeeding surgical procedures carried out elsewhere. Peritonitis, nephrosis, tuberculosis of bone and tuberculosis of glands, completed the list of complicating diseases. All six deaths occurred in group 1.

### THE IDENTIFICATION OF TUBERCULOUS FLUIDS

There is nothing at all specific in the physical characteristics of the effusion. It may be serous, serosanguineous, hemorrhagic, or purulent. It usually is serous and looks like clear cider. That which is thin, opalescent, and greenish, is supposed to be most characteristic. If such a fluid is at the same time sterile, the probabilities of its being tuberculous are increased. If bacilli of tuberculosis can be demonstrated on direct smears, the diagnosis is complete. Otherwise, the diagnosis must be deferred until acid-fast organisms have been demonstrated by cultural methods, and have then been proved to be really bacilli of tuberculosis, or until the results of inoculation of guinea pigs can be known.

In not a few instances, it may be necessary to defer the diagnosis indefinitely, awaiting the onset of pulmonary or extrapulmonary tuberculosis to add significance to the opinion regarding the tuberculous nature of the fluid. Osler's findings at necropsy, and his opinion regarding the diagnosis of tuberculosis in all cases of pleurisy with effusion, and the objections of Cabot, Rist and Webb, and of Smith, must be borne in mind when positive laboratory evidence is not obtainable.

In former years, the nature of the cells found in the exudate was believed to be diagnostic of tuberculosis. In 1900, Widal and Revaut published the results of their research, and concluded that a preponderance of lymphocytes indicated tuberculous effusion. They separated tuberculous pleurisy into the primary form, in which there are no demonstrable lesions in the lung, and a secondary form, which results from an underlying tuberculous focus in the lung. They expressed the belief that the lymphocytic reaction applies only to the primary form, that polymorphonuclear cells predominate in the earlier days of the effusion, but that they give way later to the lymphocytic type of cell.

Consideration of the cytologic response of the pleura is included in part I of this report. Theoretically, mononuclear elements should succeed the first polymorphonuclear leukocytosis, and this happens under the conditions of experiment. This sequence is not so dependable in clinical practice. Pinner and Moerke did not believe cytologic studies are at all reliable. It has seemed to me that discovery of a sterile, serous, or seropurulent effusion, containing a high percentage of mononuclear elements, is likely to be diagnostic of tuberculosis. It is not exact evidence.

The question of identification of the tuberculous nature of effusions has engaged the attention of many investigators. Jousset, Zebrowski, Goodall, Damany, Musgrave, Korns, Sears, Hedblom, and Williamson have designed or considered various methods. The final opinion can be obtained only by discovery of the bacillus of tuberculosis directly, by proof of its presence by cultural methods, or by reproduction of typical lesions in guinea pigs inoculated with the pleural fluid.

Magath and Feldman's recent paper contains a full consideration of the question, and they have outlined the methods employed at The Mayo Clinic. These are as follows:

When serous fluid from the chest is referred to the clinical laboratories for examination, it is subjected to three types of examination: first, a direct smear is examined; second, the material is cultured; third, guinea pigs are inoculated.

The following technic is employed:

Variable quantities of fluid are centrifuged for one hour, the exact quantity depending on amount submitted for examination. It is not unusual to centrifuge as much as a whole liter or even more, to obtain the sediment necessary. Finally, the amount is reduced to one centrifuge tube from which the top 1 c.c. is removed and saved. All the rest of the material in the centrifuge tube is poured out and the sediment alone is saved. From this sediment, numbers of smears are made. As a general principle, the larger the number of smears that is examined, the more likely are bacilli of tuberculosis to be found. The staining is done by the Ziehl-Neelsen method. Ordinarily, if this examination proves the presence of bacilli of tuberculosis, no further procedures are carried out unless especially requested.

When guinea pigs are to be inoculated, the top cubic centimeter that was saved from the centrifuged sample is mixed thoroughly with all of the remaining sediment, and made up to an amount of 5 c.c. with physiologic sodium chloride solution. Two guinea pigs are given injections with equal amounts of this material, one subcutaneously and one intraperitoneally, and are allowed to live for eight weeks, when they are killed and examined for the presence of miliary tubercles, especially within the spleen.

.In making the cultures on Herrold's medium, the sediment is treated with equal parts of 3 per cent hydrochloric acid, to destroy pyogenic and other adventitious organisms, and then is smeared on slant cultures and incubated for variable periods of time. Usually, the culture will develop within three to four weeks. On rare occasions, the cultures will be positive when inoculations of guinea pigs give negative results, and this depends on two factors: first, viable organisms may be present and will grow on the medium but will be of a form that is not pathogenic to guinea pigs; second, occasional failures in inoculations of guinea pigs are inevitable because of the tendency of bacilli of tuberculosis to form clumps. Clumped bacilli may occur in the fluid used for culture and not in that used for inoculation of animals, or the opposite may occur, so that on occasion either test may be positive while the other is negative. It is almost certain that inoculation of guinea pigs will be positive if viable and virulent organisms are introduced. The material injected is always as thoroughly mixed as it is possible to have it, and it is injected out of one syringe; half of the content is given to each pig. Theoretically, tuberculosis should develop in both animals. If living virulent organisms are introduced into each animal, then both will become tuberculous. Practically, that does not always occur. Frequently, when one is, negative, the other is positive, because it received that part of the fluid which alone contained viable bacilli. In one of my cases ten animals were given injections, five of which became positive, and five negative. Also, fluid at one aspiration may fail to infect animals but will give positive results at subsequent aspirations. It is presumed that the presence, of seven living organisms in the injected material will produce tuberculosis in guinea pigs, and some authors are assured than one single organism, if of virulent nature, will cause development of tuberculosis in a guinea pig. Of course, the amount of material used for sedimentation purposes is extremely important; especially when organisms are few in number. The factor of polymorphic forms that are nonvirulent probably also enters into the

question of the variability in positive and negative reports of inoculations of guinea pigs.

The best explanation for failure of tuberculosis to develop in guinea pigs, when injected with material which is known to contain acid-fast bacilli, or which is obtained from lesions known to be tuberculous, may be summarized as follows: (1) scarcity of bacilli; (2) bacilli are dead, avirulent, or of a type that does not easily infect the test animal, and (3) clumping of bacteria may make it possible to have positive results on examination of the direct smear and on culture, but to have inoculation of animals give negative results.

A positive inoculation test is acceptable and may be considered positive evidence of tuberculosis. Under the conditions existing, at The Mayo Clinic, the fear of spontaneous tuberculosis can be dismissed Magath has made as many as 25,000 postmortem examinations of guinea pigs, without finding spontaneous tuberculosis in a single instance. The reliability of the test is evident from his statement regarding necropsy of 15,000 guinea pigs to which he had given injections for diagnostic purposes: "Fifteen per cent have been positive (or 1,200) and after control of the diagnosis by clinicians and surgeons, not a single false positive has been found."

The elapsed time before reports may be made of inoculation tests may be shortened in two ways. Magath and Feldman wrote: "Diagnosis by inoculation is almost as quick as cultures and perhaps more quick when material is microscopically negative. It is possible to diagnose tuberculous lesions in guinea pigs in as short a time as fourteen days after inoculation and almost all guinea pigs that become positive at all will have lesions at the end of thirty days. Five-tenths of a cubic centimeter of old tuberculin injected subcutaneously at the end of four weeks caused no deaths in negative guinea pigs but killed nearly all positive animals within twenty-four hours."

Quick returns may also be had by employing the intra cerebal method of injection, but a high percentage of failures occurs from death of animals. It is not a method that is of value in routine work. Clinicians have not requested the employment of cultural methods with any regularity. The method is employed, however, at the clinic, by Feldman and Magath, in conjunction with inoculation tests and for scientific investigation. Their estimate of the value of the test is fully expressed in their report.

From the clinician's viewpoint, the results of inoculation of animals are still preferred to other methods of absolute diagnosis. The percentage of positive results on examination of direct smear is small, but when acid-fast organisms are found, evidence is at least acceptable, although not entirely conclusive, of the tuberculous nature of the lesion from which material was obtained. Direct smear has the advantage of speed, and a positive result at once limits the type and extent of surgical procedures. For example, open operation or drainage by means of insertion of tubes is never permissible when direct smear of a purulent exudate that is recovered from an uncontaminated pleural space contains bacilli of tuberculosis, or when the flculturally negative for other organisms after fortyeight hours. It is obvious that, when findings are positive for or highly suggestive of tuberculosis, demonstration of acid-fast organisms in direct smear constitutes sufficient confirmatory evidence. A positive culture may also be considered as confirmatory. If either or both are negative, time must elapse for the development of the disease after inoculation of animals. A positive inoculation test is acceptable without reservation.

One other test should be mentioned, although I have had no experience with it. I refer to the precipitin and complement-fixation reactions with tuberculous exudates. Ogawa concluded: "(1) Of a series of twelve tuberculous pleural exudates, 42 per cent yielded weakly positive precipitin and 92 per cent were definite positive complement-fixation reactions; (2) human pleural exudates and transudates of nontuberculous origin yielded uniformly negative precipitin and tuberculosis complement fixation reactions." He expressed the belief that his results, using fluids from both man and experimental animals, indicated that, in the exudates of tuberculous pleuritis, precipitin, and especially complement-fixing antibodies, are found in large percentage, and that a sensitive complement-fixation test, with special attention to certain technical features, may prove a valuable practical aid to diagnosis.

#### TREATMENT

The treatment of pleural effusions is not in any sense specific. When the effusion is discovered, there need be little concern about its complete removal. Aspiration may be done at once, and repeated whenever pressure due to fluid causes either distressing dyspnea or cyanosis, or when cardiac action becomes embarrassed. The time that fluid remains free within the chest is of no great concern, nor is it always under control. Courmont and

Gardere's work suggests that there is a bactericidal action exerted by the effusion.

Under all circumstances, aspiration may be done as a palliative measure, and it may be repeated as occasion requires, without much fear of changing a serous into a purulent effusion or of producing tuberculous fistulas, although either might occur. At any rate, time is not so urgent as to prevent delay of a few days, during which cultures may be grown and smears studied. If the effusion contains acidfast bacilli, demonstrable by direct smear, or if it is found sterile for pyogenic organisms, no surgical treatment other than aspiration is permissible, regardless of the physical characteristics of the fluid, whether serous, hemorrhagic, or purulent. The most tragic results I have seen have been set in motion by failure to observe such a rule. It is so axiomatic as to need no repetition, were it not for the fact that victims of procedures aimed at establishment of open drainage, continue to present themselves for whatever treatment is possible or for whatever treatment offers even a small promise of returning them to their former life of usefulness.

After the first aspiration, which provides material for identification, patients are kept continuously in bed until all acute symptoms disappear. No time limit can be stated; the time may be as short as three weeks, or the period in bed may continue for several months. In groups 1 and 2, from four weeks to fourteen weeks in bed was the usual time. With subsidence of fever, disappearance of fluid from the chest, and return to a normal sense of well-being, the subsequent treatment is the same as for other cases of convalescent tuberculosis. Patients are kept under a sanatorium regimen for periods of six months or a year, either at home or in sanatoriums. Often climatic change is urged. If, at the end of the time of probation, examination is satisfactory and there is no evidence of the development of tuberculosis within the lungs or elsewhere, patients are permitted to return to work. Whenever possible, the amount and the hours of work are graduated until work can be done without fatigue.

Results of treatment.—As a result of treatment, twelve patients of group 2 returned to work and have remained well ever since. Some others have not done so well. Five had recurring illnesses of greater or less severity at various times following their recovery from pleurisy with effusion, but finally they became self-supporting. Chronic tuberculosis of one or more organs developed in five

cases, but the patients are able to do a fraction of their usual work. Four have remained sick and are unable to do any work. The twelve who may be considered cured have remained well for periods of from six to ten years. There has not been a single instance of active pulmonary tuberculosis in the whole series of twenty cases of group 2. There have been no fatal cases in this group.

In the comparable series of twenty cases of group 1, less closely under my observation, results were much the same, except that there were six deaths, all occurring within the first year. They were cases of unusual severity. Such cases may occur in any group; the course is rapid, fulminating, and progressive until death occurs. In three of these six cases, active, acute pulmonary tuberculosis developed. Of the other fourteen patients, seven are known to be well and at work.

Gaarde's study of 126 patients of group 3 with pleurisy with effusion, examined at the clinic, was confined to those of idiopathic type, in which there was neither definitely active nor advanced tuberculosis of the lungs. He found that seventy-three patients were cured; eight had residual lesions of the lung or pleura; in ten, evidence of pulmonary tuberculosis developed; and thirty-five died. Of these thirty-five patients, twenty-nine are known to have died of pleurisy, tuberculosis, or some other condition directly traceable to their pleural infection. Eighteen of the thirty-five died within the first year, five within the second year, and four within the third year following the pleural effusion, and eight subsequently. Only seven of the thirty-five who died lived more than five years after the onset of their acute pleurisy. Gaarde expressed the belief that, if a patient survives the original acute attack of pleurisy with effusion, he has a good chance of complete recovery. He found a recovery percentage of 57.9 in 126 cases. His thought was that a patient who survives the first three years, and particularly the first five years, has excellent chances for complete recovery. In evaluating the effect of treatment, he wrote: "From the study of these cases, it is clear idiopathic pleurisy with effusion should be treated as tuberculosis, with a matter of months of rigid regimen, rest, and the methods usually applied in the treatment of tuberculosis." If this is done rather than to allow the patient to return to work when he has recovered from the acute symptoms, the prognosis will be much more favorable. Anderson was also impressed with the improved prognosis of patients who were cared for properly.

When larger groups are studied, the end results are comparable to Gaarde's and to mine. Smears reported the statistics drawn from 439 cases. One hundred nine (25 per cent) of the patients died within seventeen years. Fifty-eight (53 per cent) of the deaths were due to tuberculosis, which is equivalent to 14 per cent of the total number of cases. Approximately 70 per cent of the deaths were within five years, whereas 39 per cent occurred within two years of the time of the effusion.

When advising patients of the diagnosis, of the care, and of the prognosis, of pleurisy with effusion, it is well to stress the importance of the element of time, both of the initial acute illness and of the period of observation. Patients should be advised of Korns' experience with the Chinese patients; namely, that as a rule: "Those who rest most completely and longest have done well, whereas conversely those who have paid little attention to rest are now showing signs of active pulmonary tuberculosis. The conclusion seems justified that sero-fibrinous pleurisy of obscure origin, after proper means have been used to exclude other causes, should be considered as a manifestation of tuberculosis and should be treated as such."

#### BIBLIOGRAPHY

- 1. Anderson. H. B.: Concerning the tuberculous nature of pleurisy from the life insurance standpoint. Am. Rev. Tuberc. 17:147-158 (Feb.) 1928.
- 2. Cabot, Rist. and Webb: To what extent is the tuberculosis bacillus the etiologic factor in the pleural effusion seen in the American Expeditionary Forces. War Med. 2:988-989 (Jan.) 1919.
- 3. Courmont, Paul; and Gardere, Henri; Action bactericide sur le baccille de Koch des liquides de pleuresies tuberculeuses. Compt.-rend. Soc. de biol. 95:837-839 (July 12) 1926.
  - 4. Damany: Quoted by Goodall.
- 5. Dickey, L. B.; and Garland, L. H.: The incidence of pleural lesions as shown by roentgenograms in children known to be tuberculous. Am. Rev Tuberc. 18:404-411 (Oct.) 1928.
- 6. Gaarde, F. W.: Prognosis of pleurisy with effusion. J. A. M. A. 95:249-250 (July 26) 1930
- 7. Goodall. H. S.: The relation of pleurisy to pulmonary tuberculosis Med. Rec. 73:1074-1077 (June) 1908.
- 8. Hedblom, C. A.: The diagnosis and treatment of tuberculous empyema. Surg. Gynec. and Obst. 34:445-465 (April (1922.
  - 9. Jousset: Quoted by Musgrave.
- 10. Korns, J. H.: Case data regarding sero-fibrincus pleurisy of tuberculous or obscure origin. China Med. Jour. 40:821-827 (Sept.) 1926.
- 11. McPhedran, F. M.: Pulmonary tuberculosis of childhood and adolescence and its differential diagnosis. Canadian Med. Assn. Jour. 20:476-481 (May) 1929.

- 12. McPhedran, F. M.: Pulmonary tuberculosis in childhood. Am. Rev. Tuberc. 20:532-616 (Oct.) 1929.
- 13. Magath. T. B, and Feldman. W H: The relative value of cultural methods and guinea pig inoculations in the diagnosis of tuberculosis. Am. Jour. Clin. Path. 2:199-228 (May) 1932.
- 14. Montgomery. Hamilton: Personal communication to the author.
- 12. Musgrave. Percy; Examination of pleural fluids with reference to their etiology and diagnostic value. Boston Med. and Surg. Jour. 151:317-321 (Sept.) 1904.
- 16. Ogawa, Isamu: A study of the precipitin and complement-fixation reactions with tuberculous exudates with special reference to tuberculous pleuritis. Jour. Immunol. 7:423-434 (Sept.) 1922.
- 17. Opie, E. L.; and Anderson, Hans: First infection with tuberculosis by way of lungs. Am. Rev. Tuberc. 4:629-640 (Nov.) 1920.
- 18. Osler, William: Tuberculous pleurisy. Boston Med. and Surg. Jour. 129:53-57 (July) 1893; 129:109-114 (Aug.) 1893.
- 19. Pinner, Max; and Moerke, Georgine: Pleural effusions; laboratory findings and clinical correlations. Am. Rev. Tuberc. 22:121-183 (Aug.) 1930.
- 20. Sears, G. G.: The prognosis of idiopathic pleurisy. Boston Med. and Surg. Jour. 150:209-210 (Feb.) 1904.
- 21. Smith, A. A.: The etiology of pleuritis. especially in its relation to tuberculosis. Tr. Assn. Am. Phys. 5:266-272, 1890.
  - 22. Widal and Revaut: Quoted by Musgrave.
- 23. Williamson. C. S.: Tuberculous pleurisy; its insidicus development. Loffler's method for demonstrating tubercle bacilli in sputum and exudates. Med. Clin. Chicago. 1:360-365, 1915.
  - 24. Zebrowski, Eduard: Quoted by Goodall.

### DISCUSSION

DR. L. S. PETERS, (Albuquerque, N. M.): I know very little of the experimental side of tuberculous pleurisies with effusion, but think we owe a great deal to Dr. Lemon for the very excellent paper he has given us dealing with this subject. My dealings with tuberculous pleurisy with effusion are confined almost entirely to the clinical end. I was interested in Dr. Lemon's experiments which detailed the introduction of foreign substances into the pleura, producing by their reaction the clinical syndrome of pleurisy with effusion, yet it bears out more or less what we have encountered in pneumothorax work. Those cases which we have followed up with fluoroscopic examination, and have observed over a considerable period of time, usually show an effusion at some time or other. Various etiological factors have been put forward as a reason for the production of this effusion. In his paper Dr. Lemon mentioned that practically all empyemas are tuberculous in origin. I think we see a number of occasional cases in which the empyema may follow lobar pneumonia and not be of the tuberculous type. I have seen a few such cases. The percentage of tuberculous pleu-

risies with effusion in the hit-and-run cases with tuterculosis, are low. We see only a small percentage of our tuberculous patients, who, while under the course of treatment, develop tuberculous effusion. Dr. Lemon mentioned cases of doubling, in which it has occurred on the opposite side. During the course of my pneumothorax work, I have had a case of double effusion at the same time—in other words effusion on the pneumothoric side and then on the parallel arterial member. There have been only nine or ten such cases of idiopathic pleurisies, showing pleurisy on one side, then being well for a number of years and then developing effusion on the opposite side. In regard to treatment of these tuberculous plurisies with effusion, it can be summed up very well by saying, the less we do the better off they are. The average patient with pleurisy with effusion usually gets along all right with uneventful recovery in a reasonable length of time. Unless it is necessary to relieve pressure symptoms, I do not consider it wise to aspirate, as repeated aspiration to keep fluid down is more or less dangerous, and I am one of the old-fashioned kind who believes that effusion tends to restrict tuberculous invasion and many times lungs are saved merely by the fact that they have been kept more or less at rest by virtue of the effusion being present.

DR. R. O. BROWN (Santa Fe): I have enjoyed Dr. Lemon's paper thoroughly. One of the things that struck me particularly was the fact that the reaction which occurs when a nonspecific substance is injected into the lungs or pleural cavity, is essentially the same as that with a specific organism, such as tubercle bacilli or a live organism; thus, we find the processes are really less complicated and that they obey a general law rather than a specific one. In the diagnosis of pleural effusion, which, we all know may be mistaken for influenza-pneumonia, it occurs to me to wonder if we are safe in saying that something that preceded the condition might not be responsible for it; for instance, a localized pneumonia might have broken down some tubercles; with influenza or severe bronchitis, I believe we always have some pneumonia. Whether these preceding diagnoses that were made were not, after all, correct and that pleurisy with effusion (perhaps tuberculous) was not a complication rather than the cause of the disease, is a matter of conjecture. It is also interesting to note that Dr. Lemon has reported in a series of 123 patients, Group 3, with pleurisy with effusion, confined to those of the idiopathic type, seventy-three patients were cured, eight had residual lesions of the lung or pleura, in ten evidence of pulmonary tuberculosis developed, and thirty-five died. Eighteen of the thirty-five died within the first year; five within the second year; four within the third year following the pleural effusion, and eight subsequently. Only seven of the thirty-five who died lived more than five years after the onset of their acute pleurisy. I wonder if there might not be a maximum of immunity which we may not develop to repeated infection of tuberculosis, and, if we have had tuberculosis and gotten,

say, over fifteen years of life with it, if we do not have a pretty good chance of complete recovery. I had an opportunity recently to talk to a man interested in tuberculosis work in the clinics in Chicago. I nese have a very large endowment and have funds with which to take x-ray pictures whenever desired. He stated that it was very interesting to be able to do this and it had proved to him that he could get a shadow on the x-ray plate, appearing in the course of a week, and that in the course of a few weeks this shadow would disappear. I enjoyed Dr. Lemon's paper very much.

DR. FRANK E. MERA, (Santa Fe, N. M.): It is very true that we now rarely get pleurisy with effusion; years ago they were very common, but that was before the idea of rest had permeated throughout the profession. I believe that rest is very important in the early treatment of pneumothorax cases. By this means, I believe we escape quite a few of these bothersome cases. As to the treatment of effusion, I believe, if I have erred, I have erred in waiting too long to aspirate on account of the danger of secondary injection, as sometimes we get adhesions we might not otherwise have, thus spoiling the case as far as pneumothorax is concerned.

DR. LEMON (closing): It would be confusing rather than helpful for me to attempt to consider all the various problems that arise in a case in which there is tuberculous pleural effusion. It is proper, however, to express an opinion regarding removal of fluid. From the cases studied, it is evident that serious injury can be done by hasty or ill-considered operation, or by the use of open drainage, if patients have either a serous or purulent effusion which, on culture, does not yield pyogenic organisms. No method of open drainage should be used for sterile fluids, regardless of their appearance, and no harm will be done if interference is delayed until the results of a culture can be obtained.

From the standpoint of treatment, it is essential that all cases in which fluids are such as have just been described, should be considered tuberculous, and I have felt that there were five working rules that might be used as indications for removal of fluid:

- 1. Fluid may be removed by needle, for laboratory examinations, such as cultures for pyogenic organisms and organisms of tuberculosis, and for inoculation of animals by the methods that have been considered in the paper.
- 2. If symptoms of pressure are present, producing respiratory or circulatory embarrassment, fluid should be removed. The symptoms usually are dyspnca, cyanosis, or tachycardia.
- 3. When the chest contains so much fluid that it has caused mediastinal displacement, a sufficient amount may be removed to restore the mediastinum approximately to its normal situation.
- 4. Pleural effusion that fails to be absorbed after an interval of time that would seem to be adequate for its absorption, may be withdrawn with justification.

o. When the fluid is situated bijaverally, it should be removed.

Occasionally, it is necessary to remove fluid more than once. Rarely, fluid needs to be removed on a large number of occasions. The indications, however, are the same in every instance.

I have had no experience with removal of fluid and replacement with oxygen or air. There are theoretical grounds for believing that such a procedure might be of value, but my patients have responded satisfactorily to removal of the fluid only. Clinical experience, also, has shown that whereas aspirating a large amount of fluid seems to stimulate further exudation, aspirating a relatively small amount results in an augmented rate of spontaneous absorption.

It is my experience that 5 to 20 per cent of patients who come with draining sinuses apparently resulting from simple, chronic empyema, are, in reality, suffering from tuberculous empyema. Obviously, these pleural cavities are infected with various types of organisms, and even though tuberculosis may be shown to be present, yet the patients must be treated as are others with chronic empyema. The results of treatment, however, are not as satisfactory as in nontuberculous cases; only a limited number of patients recover without a persistently draining sinus.

### WHAT AN ORGANIZED GROUP CAN DO TOWARD FORWARD-ING CLINICAL RESEARCH AND TREATMENT OF CANCER

Reviewing 436 cases of cancer analyzing a few of our clinical problems in diagnosis and treatment.

GEORGE ROY STEVENSON, M. D. San Diego, Calif.

(Read before the Forty-First Annual Meeting of the Arizona State Medical Association, held at Globe, Ariz., April 21-23, 1932.)

As early as 50 B. C. surgical treatment of cancer has been the method of choice. Since that time and up to now, no cure has been found. Those who have had much expereince in the diagnosis and treatment of cancer nourish a hope that some day a prevention or cure for this destructive disease will be discovered. The failure through all these years on the part of medical investigators to produce a cure, has stimulated the activities of the quack and made the public easy prey. The cancer patient willingly will accept the faintest ray of hope, no matter by whom it may be offered or the form in which it is applied. Our daily press and magazines are full of new dis-

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coveries for the cure of cancer, exploiting every day a new discovery of its cause or cure, all of which have been cast into the discard after a scientific and searching application as to value has been made. This seemingly hopeless condition has created many pessimists among us, and it behooves each and every one of us to keep an open mind on all new and suggested theories, for many useful and accepted inventions have come to us by chance, and through this means some form of treatment or prevention will certainly be discovered.

Summing up briefly the chronological development in the treatment of cancer to the present day, we find in the early history of medicine the eras of witchcraft and crude chemistry, followed by the period of all manner of agents-vegetable, mineral, gaseous, and mechanical, such as the twisting of a wire around the base of the growth. Then there was the period of the escharotic pastes, which have long had their advocates even in this day. Some of the well-known pastes, such as the Vienna paste, are still in use. In this country the Indian medicine man has played a part in the treatment of cancer, with his herb and whiskey recipe. The eighteenth century brought us the period of electricity, with its coils and various appliances, which the quack immediately seized upon as a new and lucrative means of foisting his sure cure upon the gullible public. Even to this day, many lesions are still being treated with the much-abused violet ray. In 1898 the discovery of radium by Professor and Madame Curie, and the immediate use by the quacks of this new mineral in all sorts of pastes and oils and drinking water, received such widespread publicity that its use by the profession fell rapidly into disrepute so that for several years its employment in the field of scientific medicine was delayed. In recent years there have been many ardent students confident in the belief that a germ or parasite was the specific cause for malignant tumor growths, and specific serums have been produced for injection into the patient, but nothing of value has come of it, only one more new hope. And last, but not least, has come the advent of endocrine and glandular therapy in its various forms and combinations, extensively used in this country and abroad, but it has failed to be accepted as a cure. And so, through two thousand years down to the present time, no treatment has proved of value except surgery, x-ray, and radium.

In the last decade, world-wide attention has been given to the study of cancer, both experimentally and clinically, and each year we have seen great advances for more accurate diagnosis and treatment.

Much of the success in the present-day knowledge of diagnosis and treatment of cancer is due to organized groups who have been intelligently interested and who have had made possible for them, through large amounts of clinical material and scientific equipment, the opportunity for research. But this knowledge, unfortunately, has been limited to a very small number of groups throughout the world. According to the American Society for the Control of Cancer, four cases of cancer a year are seen by the average physician. Multiplying this by a lifetime of clinical pracritice, very few have felt qualified adequately to diagnose and treat cancer with the present-day knowledge of the subject. Under the leadership of this society and the American College of Surgeons, group clinics have been formed throughout the United States and Canada for a two-fold purpose: first, of studying more thoroughly the clinical and therapeutic problems confronting the medical profession today; second, of affording the opportunity to a greater number of men to become skilled in better diagnosis and treatment, with the hope that, by the correlation of records from this large amount of clinical material with details of treatment and end results, facts of great importance will be contributed concerning heredity, cause, prevention, and, eventually, the cure.

Professor Roussy, head of the Institute of Cancer in Paris, before the International Congress of Radiologists last year in Paris, said, "It is better to have the work of cancer research in many hands in all parts of the world than in isolated groups, for no one knows who will find the cause, or various causes, and it will give all a small part of the credit in the final analysis and solution." Already we have knowledge that different races in various parts of the world are more susceptible than others to malignant tumor growths in certain anatomical locations of the body. If we accept the theory of irritation, we can explain quite readily why the incidence of buccal cancer in the betelnut chewers of the Phillipines and Ceylon among females ranges from 13 to 25 per cent, while among the American women who chew nonirritating gums, it is only 1 per cent. But we can't answer the question of why in these same groups both death rates of cancer of the stomach are the same, or 25 per cent. No disease is so widespread as cancer. It is observed in all races of people and occurs throughout the animal kingdom. Primitive peoples removed from civilization suffer to a lesser extent than the white races, which is true even in our own country among the negroes and Indians. These statistics, however, may be explained on the basis of inadequate medical observation and proper diagnostic facilities in the more remote districts. Customs of eating and drinking and cleanliness, occupational irritations, and the various tropical and chronic diseases, play a part in the research problem. Even the automobile, with its exhaust of carbon monoxide, is being seriously condemned, along with the after effects of influenza, in the rapidly increasing number of bronchial carcinomata. In Vienna, at the Pathological Institute of the University, there were forty-seven cases out of three thousand autopsies in 1930. In 1931, while I was there, more than fifty cases had been recognized during the first six months, with the possibility that this would double during the twelve months.

In this present era of clinical and experimental research, the clinician is confronted with a very complex problem of separating the clinically benign from the clinically malignant. These patients are coming to the physician very much earlier than in the days gone by, and present an entirely different clinical history and picture. Likewise, the surgeon, if called upon to operate, may be removing a tumor tissue that he is much in doubt about from its gross pathological appearance; and he seeks in the emergency of the moment the assistance and advice of the pathologist, who, after making a hurried frozen section, may be still more in doubt. After a hurried consultation in the operating room, it is decided by the old adage, "When in doubt, operate." And so, many times sacrificing surgical procedures are carried out unnecessarily. This, of course, is regrettable from the patient's standpoint and adds to the records one more case as cured, when, instead, it should have been listed as an undetermined, or a borderline, case. Bloodgood has shown quite recently, in a large series of cases of breast tumor that were studied carefully ten years ago by very able pathologists and were diagnosed either as malignant or suspicious, that these same specimens, reviewed on account of the excellent percentage of permanent cures in this group recorded by follow-up, were pronounced benign in nearly 100 per cent. The experienced pathologist has given us much information in recent years concerning the different degrees of malignancy, its relative sensitivity to radium and x-ray, and its ability to metastasize or not to metastasize. With this information the clinician has been better able to prognose the outcome of his patient's ailment; the radiologist understands better the type of tumor cell which requires a definite penetration to destroy its growth; and the surgeon has learned in which cases to do his most radical surgery.

During the past three years, since the organization of a cancer board in San Diego, we have had the opportunity to see 436 cases of malignant tumor growths, involving every organ and tissue of the body either primarily or secondarily. Our group was organized under the plan of the American College of Surgeons and in connection with the General Hospital, which provided 50 mgms. of radium, a 200,000 v. deep therapy equipment, pathological department, radiologist, a recording secretary, and social service worker. Weekly conferences were held on all cases presenting themselves at the clinic and those that were in the hospital for diagnosis and treatment. There was also a follow-up of those who had received treatment. Our efforts have been directed entirely toward clinical research and the results of our treatment. As yet we have been unable to engage in experimental research to any great extent, due to the lack of special equipment and a highly trained staff of research workers to carry on this phase of the work. Individual members of this group, representing each department of medicine and surgery and the specialties, have expressed themselves as having profited much by the group study of the cases, and the patients have been benefited by the combined judgment made possible through greater experience.

The results of our first year's experience were rather disappointing. One hundred and eighteen cases were admitted for treatment or palliative care, the results of which were fifty-seven deaths, or nearly 50 per cent, with twenty-eight improved, or 25 per cent, and thirty-three unimproved, or 28 per cent. Analyzing some of the reasons for such a high mortality rate, we discovered that every one of these cases was far advanced, having sought medical aid too late. Many had fallen into the hands of the cultists, coming for medical care as a last resort, while others had received symptomatic care from their family physicians, who either did not have the knowledge of diagnosis and treatment of cancer or had drifted into the belief that there is nothing to be done but to await the inevitable end.

The second and third years brought before our group 318 cases for diagnosis and treatment. The average age was 62 years, ranging from 19 to 84. There were 152 males and 166 females. Surgical treatment was given to 123, or 39 per cent as the major treatment, while seventy-two or 22 per cent, received radium or deep therapy or the combination of the two, as the major treatment. Seventy-five or 23 per cent, were improved; thirty-two, or 10 per cent, unimproved; 124, or 39 per cent expired.

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There were sixty-eight autopsies, or 22 per cent; 231 proved malignancies, or 73 per cent; fifty-four proved not malignant, or 17 per cent; and twentythree cases, or 7 per cent, were undertermined due to various reasons, such as refusals for biopsies, or through fear, not entering the hospital for further diagnosis. Comparing the analysis of the first group of 118 cases with the second group of 318 cases, we note that, instead of a mortality rate of 50 per cent, as we had the first year, it fell to 39 per cent for the next two years. Also it shows that 17 per cent of the cases presenting themselves for diagnosis were proved not malignant, and 7 per cent undertermined, as against none in the first group. We explain the improvement in our results on two theories: For the first year the machinery of our group was just beginning to function; second, by the publicity of such an organized group, more patients sought advice and treatment earlier, which was a distinct advantage both to the doctor and patient. 'We have not referred to the word "cured" in our statistics, but prefer to ust "improved" instead, because we have not had the opportunity to observe these cases that are living and well over the required five-year period of observation.

Biopsies are performed on all cases preoperatively or at the time of exploration, for the twofold purpose of obtaining a better working knowledge of the type of malignancy being treated, and a more accurate compilation of proved cases. Proved diagnosis in cancer research is as much to be desired as in any other branch of the practice of medicine or surgery. Without positive pathological proof before beginning treatment, the records of such work are unreliable and do not aid a program of clinical research. On the other hand, a negative pathological report must not always be construed as a positive finding against malignancy. Many times it is necessary to remove numerous sections, and the pathologist may find it necessary to make serial sections of such a piece of tissue. As an illustration, a female patient, age 28, complained of bleeding from the rectum for two months. Physical examination showed an ulcerated area about the size of a nickel, on the posterior wall, 3 inches from the anal margin. A biopsy was taken at this time, which was reported benign, and the ulcer was cauterized. About two months later, a second biopsy was done, which was reported as benign, with a second cauterization. Following the second cauterization, five radium applications were made, the attending surgeon and radiologist applying their treatment without positive proof of a malignant

ulceration, relying entirely upon clinical findings. During the interval following these treatments and her appearance before our Board in 1929, the patient had complained of a sense of pressure in the rectum, with considerable mucus, a bloody discharge, and almost a complete obstruction. emergency colostomy was performed without any attempt to explore the tumor mass in the rectum or remove it. At this time a third biopsy was obtained and reported benign. During the five years, from the onset of this patient's symptoms followed with cauterization and five radium applications and an emergency colostomy, she was believed to be clinically a case of cancer of the rectum. At autopsy performed on Feb. 10, 1932, there was no evidence of malignancy in the rectum or metastatic involvement throughout the organs of the body. The pathologist's report and final diagnosis was "chronic proctitis of mycotic origin and lymphadenitis of the celiac axis lymph nodes of the same type". My purpose in bringing this case to your attention is to show what great harm can result from a careless unproved diagnosis and the indiscriminate use of radium and cauterization.

As a member of the surgical division of this group, I have been convinced that, on too many occasions, cases are pronounced "inoperable" and returned from the operating room with nothing done but an exploration, with the assurance to the family that nothing more could be done. I am unable to determine whether this too-frequent occurrence is due to the surgeon's desire to maintain a low percentage in his death rate or to a lack of courage and skill. Many happy results, both for the doctor and patient, have been my experiences in just such cases. I believe in the removal of any tumor mass that is anatomically removable. mean by this, of course, where there is not metastasis to vital organs. Age does not prohibit such a procedure, nor does the condition of the patient inhibit such a surgical undertaking. Two-stages, or even three-stage, procedures may be required, according to the judgment of the operator. As an illustration, a woman, age 35, had complained of abdominal pain for two years. She had lost 40 pounds in weight. During an attack of abdominal pain, she discovered a tumor mass in the upper abdomen. Her family physician's diagnosis was either a tumor or an obstruction. X-ray examination revealed a filling defect of the transverse colon, and the greater curvature of the stomach. Stool examinations showed large quantities of occult blood. An exploratory operation revealed a large inflammatory

mass involving the great omentum, the transverse colon, and the anterior wall of the stomach. On first observation, the removal seemed impossible, and several of my colleagues in the operating room at the time advised that the best thing to do was to close the abdomen and send the patient back to her bed. In attempting to mobilize this mass, the posterior wall of the transverse colon was ruptured, and it seemed like a hopeless undertaking. The entire mass, through which ran the transverse colon with the great omentum, was mobilized outside the abdomen and resected, leaving a two-barrel colostomy, as done in the Mikulicz first-stage procedure. This patient made an uneventful recovery from her first stage operation, and six weeks later the doublebarreled colostomy was closed extraperitoneally. It has now been two and one-half years since her operation. She has regained her normal weight of 185 pounds, and feels perfectly well. The pathological report was "adeno-carcinoma of the colon". It has now been four and one-half years since the onset of this patient's first symptoms. We feel quite certain that, if our surgical removal of this tumor mass had not been done, this patient would not be living and well today. I am sure that many of you have had similar experiences.

I am confident that, since the organization of such a group in our community, we have accomplished a great deal of good for this type of patient. We have enlisted the confidence of the people to seek the advice and counsel of the profession instead of the quack. As individuals, we have profited in experience and have learned many ways in which we can offer assistance to these unfortunate sufferers, who in the past have been badly neglected. Many months, and even years, of usefulness and comfort have been added to the lives of a great number of these patients. From a social and economic standpoint, long periods of hospitalization and invalidism can be avoided, provided proper treatment has been instituted by experienced men, thus relieving a great burden upon our tax-supported institutions, for many of these neglected cases become indigent.

With such a record of service as a weapon in the hands of qualified men in a community, it is easier to obtain support from public officials in supplying the means of equipment and apparatus. And last, but not least, you will be making a great contribution to posterity, no matter how small your individual part may be, that will aid the next generation or two in finally solving one of our most complex medical problems.

### PUBLIC HEALTH NOTES

J. ROSSLYN EARP, DR. P. H.

Director New Mexico State Bureau of Public Health

### OPHTHALMIA NEONATORUM

A report from the schools for blind children, of the London County Council, shows that last year 20 per cent of the blindness among the pupils was due to ophthalmia neonatorum. In New Mexico, this condition is responsible for just double that proportion (40 per cent) of the blind children in the School for the Blind at Alamogordo. In London, they can boast that, while the reported cases of ophthalmia neonatorum have not decreased in the last fifteen years, the amount of blindness resulting from these cases has been cut in half.

The Lancet' infers that the larger proportion of cures is due to more efficient care and adds, "By far the most important part of treatment consists in frequent irrigation of the eyes during the acute stage, the frequency being based upon the amount of discharge". Such treatment almost implies hospital care. At least mother and baby must be within easy access of expert medical aid. How much more difficult to secure these conditions in New Mexico than in London! We must be the more vigilant in seeing that adequate prophylaxis shall prevent the necessity of treatment. A copy of the Regulations governing the prevention of infant blindness is available to any physician, upon request.

### COLLAPSE THERAPY IN TUBERCULOSIS

The modern development of collapse therapy must be one of the factors influencing the downward trend of mortality from tuberculosis. How important this method of treatment has become from the clinical point of view, is shown in a recent article of Hawes and Stone<sup>2</sup> who survey present practice in various parts of the country. In Saranac Lake, 40 to 50 per cent of patients; in Detroit, 57 per cent, are receiving some form of operative collapse treatment.

The probable good effects of this tendency, not only directly upon tuberculosis mortality, but also upon the incidence of fresh cases, has been very clearly foreseen and forecast by Hruby<sup>3</sup>. In a series of 1,600 cases of open tuberculosis, collected from the literature, Hruby finds that, after "phrenicectomy," \$1.5 per cent became sputum negative; after pneumothorax, 48 per cent. The use of collapse therapy on a large scale means, therefore, that a large proportion, roughly a quarter, of all cases of open tuberculosis will become closed cases. This

must have a significant effect upon the spread of infection.

Moreover, Hruby insists that collapse therapy with adequate follow-up care in the home, is a satisfactory substitute for prolonged care in a sanatorium and is much more economical. This aspect of his argument is of particular interest in New Mexico, which has no sanatorium for indigent cases. If health officers can secure the help of physicians skilled in thoracic surgery to institute collapse in suitable indigent cases, they should be willing to set aside some of the time of the county public health nurse for follow-up care.

#### POSTVACCINATION ENCEPHALITIS

In a recent issue of Public Health Reports', Surgeon Charles Armstrong offers some suggestions for this rare complication of vaccination. There have been seventy-one American cases since the disease was first reported in 1924. These have followed the use of calf virus from ten, out of a total of twelve, vaccine establishments. The American fatality rate is 37 per cent, as against a European rate of 42.

While the etiology of this condition remains obscure, attempts at prevention must be more or less empirical. Doctor Armstrong offers the following suggesions.

The vaccination technic should employ a small superficial insertion, never over one-eighth inch in its greatest diameter, and should employ no routine dressing. Infancy is the best time for performing the primary vaccination.

Evidence is presented which suggests that inoculation with diphtheria toxoid tends to render mice somewhat more resistant to vaccine virus subsequently administered intracerebrally. On the strength of these experiments and of certain considerations of our knowledge of nonspecific immunity, the following routine is recommended:

The first dose of diphtheria toxoid is to be given at six months of age, and the second dose one month later; vaccination against smallpox is to follow the second inoculation in from three to four weeks.

While one may not have too much confidence that this procedure will certainly avert the occasional occurrence of vaccination encephalitis, it has no drawbacks and seems to deserve a trial.

## REFERENCES

- 1. Editorial, The Lancet, June 18, 1932. p 1314.
- 2. Hawes, J. B., II; and Stone, M. J.: Collapse the apy of pulmonary tuberculosis in the New England states. J. A. M. A. 93:2048 (Jne 11) 1932.

- 3. Hruby, A. J.: The public health aspect of collapse therapy. Tubercle, 13:401 (June) 1932.
- 4. Armstrong, C.: Postvaccination encephalitis with special reference to prevention. Public Health Reports, 47:1553, (July 22) 1932.

## CASE REPORT

FELIX P. MILLER, M. D. El Paso, Texas

(Read before El Paso County Medical Society, April 25, 1932).

The patient, a young lady about twenty-four years of age, had been suffering with severe attacks of abdominal pain, often attended with nausea and vomiting. She had previously had surgical intervention for a suppurative appendix, when she states, the drain was removed on the second day. Frequently the attacks were so severe that she would have to leave her work because of the cramps and severe pain. Most of the attacks were attended with nausea, and several had been accompanied by both nausea and vomiting. On one occasion there had been a rise of temperature, but always attacks were accompanied by an increased pulse rate.

Gastro-intestinal studies by the roentgen ray, with barium meal and barium enemata, indicated a partial obstruction at the junction of the ileum and the cecum. Her last attack was attended with definite symptoms of obstruction.

At operation, under spinal anesthesia, we found an obstruction near the hepatic flexure of the ascending colon. The ascending colon was markedly distanded. We found a congenital band beginning above the hepatic flexure crossing the colon at the hepatic flexure. At its origin, it was slightly fanshaped, extending down and across the colon, having its attachment to the mesentery near the ileocecal junction. When this band was picked up between the fingers, it presented a ribbon-like appearance. When released, it at once pressed upon the colon, causing the obstruction. This band was removed by dissection with scissors, beginning at its lower extremity and cutting it free along its attachment to the colon, to its origin above the hepatic flexure. The colon at once resumed its normal shape.

Complete relief has been afforded by the simple removal of this congenital band.

# MEETING OF PACIFIC ASSOCIATION OF RAILWAY SURGEONS.

EL PASO, OCTOBER 7 AND 8.

Final announcement is made of the meeting of the Pacific Association of Railway Surgeons, to be held on October 7 and 8, in El Paso. A dinner for members of the Association and visiting doctors and their wives will be held on the night of October 7th. A dinner for members of the Association will be held on the night of October 8th. Plans for

visiting points of interest in El Paso, and her neighboring city, Juarez, Old Mexico, have been made. Ample facilities for golf are available. A trip to Carlsbad Caverns has been arranged for October 8th. Members so desiring may take the trip to Mexico City leaving El Paso on October 10th. Officers of the Association are: President, Dr. Giles S. Hall, Los Angeles, Secretary, Dr. W. T. Cummins, San Francisco. Chairman of Program Committee, Dr. Philips Stephens. Local arrangements are being made by a committee of which Dr. R. L. Ramey is chairman. Other members of the committee are Drs. J. M. Britton, B. H. Britton, W. L. Brown, J. J. Gorman, J. B. Gray, R. H. Homan, S. F. King, T. J. McCamant, F P. Miller, J. A. Pickett, E. W. Rheinheimer, F. P. Schuster, S. A. Schuster, H. H. Varner, W. W. Waite, H. E. Stevenson.

Members of The Women's Auxiliary to the El Paso County Medical Society are making plans for entertainment of the wives who are in attendance.

#### PROGRAM

Friday, October 7, 9:00 a.m.

- 1. Opening address.
- 2. President's Address.
- Round Table: Diagnosis and Procedure in Handling Luetics among Railway Employes,
  - a. The Special Senses: Eye, Ear, Nose, Throat.
  - Dr. P. H. Goldberg, Los Angeles. b. Cardio-Vascular: Dr. S. C. Davis, Tucson.
  - c. Psychoneurological. Dr. Mott Arnold, San Diego.

(Speakers allowed 15 minutes each.)
30 minutes discussion

Saturday, October 8, 9:00 a. m.

- 1. Urinary Calculi in a Railway Hospital.
- Dr. Burnet Wright, Los Angeles.

  2. Methods of Treatment which Have Proven Suc-
- cessful in Fractures of the Major Extremities—(with latern slides.)

Dr. Paul B. Magnuson, Chicago, Ill. (by invitation)

Discussion opened Dr. Alfred Gallant, Los Angeles.
(by invitation)

3. Election of officers for the coming year.

# THE NEW MEXICO MEDICAL SOCIETY

SEMI-CENTENNIAL SESSION Santa Fe, New Mexico May 19-21, 1932

#### May 19, 1932

The Semi-Centennial Session of the New Mexico Medical Society convened at Santa Fe, N. M., where registration headquarters had been established in the La Fonda Hotel, most of the business and scientific sessions being held in the Lecture Room of that institution.

#### MEETING OF THE COUNCIL

Called to order by the President, Dr. M. K. Wylder (Albuquerque) at 9 a. m., there were present: Ex-officio members, Drs. M. K. Wylder and L. B. Cohenour (Albuquerque); members, Dr. R. O. Brown (Santa Fe) and President-Elect F. D. Vickers (Deming).

Financial report of the Treasurer, Dr. L. B. Cohenour (A!buquerque) was read by him as follows: Balance on hand at annual report

Total cash received to May 19, 1932.....\$2,651.99

(Balance half fee) ..... 100.00 Secretary's Salary for 1931-32..... 300.00 American Medical Association-Directory... 12.00 Gordon-Horton Printing Co.-500 letter heads ..... 5.75 Gordon-Horton Printing Co.— 2ξ0 stamped εnvelopes ..... 7.50Gordon-Horton Printing Co.— 10) application blanks ..... 4.50 Gordon-Horton Printing Co.

250 stamped envelopes .....

Gordon-Horton Printing Co.-

 100 letter heads
 3.50

 Reporter for 1932 meeting
 (advance half fee)
 100.00

 Gordon-Horton Printing Co.—
 4.75

Total expenditures to May 19, 1932........\$1,126.30 Total Balance on hand May 19, 1932......\$1,525.69

Outstanding Indebtedness
Southwestern Medicine for 196 members

 for 1932
 \$ 392.00

 Secretary's salary for 1932-1933
 300.00

 Reporter for 1932 meeting
 (balance of fee)
 100.00

 Treasurer's bond for 1932-1933
 5.00

 Approximate total of indebtedness
 797.00

 Expected balance after all bills are paid
 728.69

Respectfully submitted, (Signed) L. B. COHENOUR,

Sec'y.-Treas.

7.50

Motion that the Treasurer's Report be accepted and approved as read was made by Dr. R. O. Brown

(Santa Fe), seconded by Dr. F. D. Vickers (Deming), and carried.

No further business arising, adjournment followed at 10 a.m.

#### GENERAL SESSION

The meeting was formally opened at 10 a.m., when the President, Dr. M. K. Wylder (Albuquerque), announced that "The Fiftieth Session of the New Mexico Medical Society is called to order, and address of welcome will be made by Honorable Arthur Seligman, Governor of New Mexico."

In his address, Governor Seligman stated that he welcomed the physicians to the ancient and historic capital city of the State, with mingled feelings of pride, humiliation and gratitude-with pride because of what has been achieved by the profession in the lifty years since the Society's organization. He recalled that it was within his own lifetime that the 1 ailroad had come into New Mexico, bringing the advance guard of practitioners; that before that time the people of wealth in the State who suffered from chronic ills would, as a rule, travel to St. Louis in the stage coach, in order to obtain diagnosis and treatment for their condition while in the isolated settlements, itinerate quacks, old women and medicine men, and much too often the so-called witch doctors, would hold sway. "There were no hospital facilities then and none of the fine clinics we have today which are at the service of everyone. Yet marvelous cures were credited to your profession in those days of hectic surgery with none of the modern facilities to aid. The few practising physicians gave of their strength freely; they were often compelled to travel many miles on horseback and foot, in all kinds of weather and under all conditions. You can understand, therefore, my pride when I point to the selfsacrifice of your profession and the marvelous strides forward which have been made since the organization of your Society. It is for these reasons, too, that a sense of deep humiliation and gratitude overwhelms me." The Governor also commented on the increase in the number of medical practitioners in New Mexico and referred to the opportunities for the physician in the large isolated areas where numerous settlements still depend on primitive home remedies and unskilled practitioners without training or licenses. In closing, a tribute was paid to the physician as the healing angel and to the profession, in that no other field of science has shown such great progress as medicine in the past fifty years.

Honorable David Chavez, Mayor of the City of Santa Fe, also expressed his pleasure at welcoming the members of the Society and hoped all would have ample time to visit some of the many places of historic interest in and around the city. "We want you to feel," he stated, "that we want to do everything that we can to make your visit pleasant. We want to be hospitable in every way that we can, and I am sure that the members of the profession who belong to this Society from Santa Fe will see that you are royally treated. It seems to me it was more or less appropriate that you selected this beautiful

city of Santa Fe as the place of your fiftieth convention. One cannot help but think of the sacrifices and benefits your profession is bringing to mankind and compare them, to a certain extent, to the history and the sacrifices which were made by those pioneers who many years ago came to this soil and brought civilization to the Southwest and to America. I know that many of you will be interested in the early history of Santa Fe and I urge upon the members of the profession from Santa Fe to acquaint their brother members of the Society with some of the relics and history that we have here in order that, at some later date, some of these members may have a little time to come back and see us again in Santa Fe and visit our places of interest and enjoy the scenic rides and atmosphere of this ancient city. As a common ordinary layman and without attempt to infringe upon the scientific part of your program, which, I understand, begins this afternoon, it might not be inappropriate to say that even we laymen appreciate what your Society is doing for humanity. Even within the memory of many of those present, infant mortality was very high here in New Mexico. Now, the child's chance for life is fully twice as good as it was fifty years ago. Added to this, you have almost abolished vellow fever, greatly reduced the death rates from malaria, tuberculosis, and other diseases, and the average span of life has teen lengthened from 40 years, in 1830, to 60 years, in 1930; and we can understand that, if the cause of cancer can be discovered, the average of man's life in 1950 may be as high as 70 years. We say this, gentlemen of the New Mexico medical profession, to have you understand that, as a whole, the average man realizes and appreciates the service that you are rendering to humanity. Many times, many of you probably feel that people are ungrateful, that you are very poorly paid and that you cannot collect your fees, but I believe that you cannot help but feel proud when you realize that those people whom you are assisting, whom you are helping to recover health, really appreciate the services you are rendering. I want to say again, Mr. President and distinguished members of your profession, that you are heartily welcome to the city of Santa Fe and we trust your deliberations will be successful. that you will continde to serve during the next fifty years as well as you have during the past fifty, and that you will continue to serve during the next fifty this State to the end that, within the next fifty years, we shall have made the same progress that you have made during the last fifty. Thank you."

In response, Dr. M. K. Wylder (Albuquerque) replied: "I first want to say that I, personally, and I think every member of the Society here, as well as the visitors, owe a vote of thanks to the Governor and to the Mayor for the encouraging words and hearty welcome they have given us. Their addresses of welcome on account of the Fiftieth Anniversary are a little out of the ordinary and are certainly inspiring and encouraging to all of us. I have attended a great many medical meetings and there are a great many things we all do the same way. No med-

ical meeting is ever opened and gets under way without addresses of welcome from representative citizens of the community, who give us the glad hand and tell how happy they are to have us with them. I particularly remember one meeting I attended in Cleveland, Ohio, a few years ago, where the Chief of Police was among those who welcomed us. Among other things he told us to be sure and wear our badges, and that every man wearing a badge would be safe at any hour of the day or night and would be seen to his hotel without question. I feel we will be protected here in Santa Fe if we wear our badges. We are certainly glad to come to Santa Fe; we always have a good time here and appreciate the spirit of good fellowship extended. This being the Fiftieth Anniversary of our Society, it is well that we look back and consider that in 1882, fifty years ago, a few men got together and organized the New Mexico Medical Society, realizing at that early date the advantage and benefit of getting together and exchanging views and ideas, reading papers, and perhaps, in those days, taking a drink together. As we consider the hardships those men endured fifty years ago, when there was only one railroad through New Mexico and only one train a week ran over it, as we realize the difficulties they endured to get together and organize this Society and how, despite every obstacle, they did marvelous work, as Governor Seligman has so ably told us, in building up the commonwealth, let us strive to keep up the high standard which these pioneers set, so that in 1982, when the first century of this Society's existence is passed, those in attendance can report all along the line that the men of the Society in 1932 kept up the same high ideals attained by those original organizers. If we can do this, we can feel we have not lived in vain. I now take great pleasure in introducing the new President of the Society, Dr. F. D. Vickers, of Deming, N. M."

Dr. Vickers: "I deeply appreciate the honor of being president of this Society, and especially of being the semi-centennial president. I am sure I have never done anything that might be construed as a reason for electing me to the presidency of this organization, but, as I am classified as a country doctor, I feel it is a particular honor to the country doctor, so will speak to you on 'The Country Doctor of the Future." The doctor affirmed that "we have discarded the habiliments which marked the doctor of other times. We hobnob with the business man; serve on his boards; belong to his clubs; play his games, and, along with him, subscribe to charities." But the average business man's hope and dominant ideal is to improve his own condition by making, buying and selling for profit, while the medical man's ideal is to lessen disease, and no one would knewingly employ a physician who could not prevent, if possible, that which he is prepared to treat. We have in the United States one hundred fifty-two thousand rural one-room schools, with more than three million pupils that as yet have not come under the consolidated school system. Many of these country people are more or less isolated. They need

protection against contagious and nutritional diseases such as smallpox, diphtheria, scarlet fever, malaria, hookworm, pellagra, and rickets. They need early diagnosis in tuberculosis, syphilis, cancer, and other chronic diseases. These people have lost the crossroads doctor. He has died or moved away to the city to become a specialist and there is no prospect of his place being filled by the oncoming medicos. In one generation 50 per cent of the doctors have become specialists and now 50 per cent of the medical students select a specialty before they graduate. Specialism has come to stay and the advance to be made in medicine in the future will not be made by the country doctors like Jenner and Koch. It seems more likely the future discoveries will come from much cooperation in large centers by the correlation of work of many well-trained men." Dr. Vickers stressed the farming industry as basic to our national prosperity to a greater extent than in many other countries, and that our scattered peoples are entitled to the benefits of scientific knowledge, which is not discovered for the city people alone, so that public opinion should be so moulded as to foster some plan by which a small tax, with possibly a community budget and other help, would guarantee small community centers for such outlying districts as have no medical care. "These people should not be denied what science has for the prevention and care of disease, and medical men should back some system to take the place of the good old country doctor who used to go to the people."

Adjournment for luncheon.

#### HOUSE OF DELEGATES

A meeting of the House of Delegates was held at 1:30 p.m., with the following members in attendance: President, Dr. F. D. Vickers (Deming); Secretary-Treasurer, Dr. L. B. Cohenour (Albuquerque); Dr. M. K. Wylder (Albuquerque); Dr. C. A. Miller (Las Cruces); Dr. R. S. Pousma (Rehoboth); Dr. L. A. Thompson (Springer); Dr. C. R. Bass (Cimarron); and Dr. R. O. Brown (Santa Fe).

Minutes of the Council meeting of May 19, 1932, were read and, on motion of Dr. Brown, seconded by Dr. Wylder, were ordered approved as read.

The Secretary, Dr. L. B. Cohenour (Albuquerque), read his annual report, as follows:

"Gentlemen: I hereby render a report of the affairs of the office of Secretary-Treasurer of the term ending with this session:

"At the Albuquerque meeting, May 20, 1931, there were a good many members suspended for non-payment of dues, and, immediately following this, twelve members were reinstated. Three new members were admitted through affiliation with their county societies. One entire county, that of Eddy, is delinquent at this meeting.

"Members in the Society at this time are as follows:

10,70	1931	1932
Berna'illo County	52	43
Chaves County	20	22
Co fax County	18	17
Curry County	10	12
Dona Ana County	11	12
Eddy County	5	
Grant County	18	11
Luna County	6	6
McKinley County	11	11
San'a Fe County	16	16
San Miguel County	5	9
Union County	9	8
Members at Large	37	29
Total in good standing		196

"No new applications for membership were received to be presented at this meeting. Membership this year is less than last year, partly because of removal from the State, and because of the general financial depression. Four deaths of members of the Society were reported as follows:

"Dr. Jesse George Holmes, Alamogordo, N. M., Oct. 14, 1931.

"Dr. David H. Lewis, Albuquerque, N. M., Oct. 29, 1931.

"Dr. E. D. McKinley, Alamogordo, N. M., May 17,

"Dr. J. O. Hatcher, Deming, N. M.

"Respectfully submitted,

(Signed) L. B. COHENOUR,

"See'y.-Treas."

Motion by Dr. R. O. Brown (Santa Fe) that report of the Secretary be adopted, was seconded by Dr. M. K. Wylder (Albuquerque), and carried.

The Sccretary, Dr. Cohenour, read a letter from the Colorado State Medical Society, dated May 17, 1932 (Edward Delehanty, M. D., President), appointing Dr. George P. Lingenfelter, Denver, as Fraternal Delegate to carry the best wishes and the congratulations of the Colorado State Medical Society on the occasion of the New Mexico Medical Society's Semi-Centennial.

Dr. Cohenour also read extracts of a letter received from the American Medical Association in regard to Senate Bill No. 572 and H. R. 7525, known as Jonez-Bankhead Bill, whereby it was proposed the F: deral Government should cooperate with the states in promoting the welfare and hygiene of mothers and children, and urging opposition to these measures.

Dr. M. K. Wylder (Albuquerque) expressed the belief that it might be well for the Society to pass a resolution condemning these bills, and stated that he had written personally to Congressman Chaves and Bracen and to Senator Cutting requesting their opposition to the measure; that Congressman Chaves had replied he would oppose it, while Congressman Bracen stated his intention to support it since he thought it would greatly benefit rural communities. Senator Cutting replied that the measure

would have his careful consideration and did not commit himself.

Dr. R. O. Brown (Santa Fe) expressed the belief that consideration should be given as to whether or not the Bill would benefit New Mexico, that while in general he did not see that such a measure would be highly desirable, yet in New Mexico, where there are not enough doctors to supply the rural communities or nurses to instruct midwives without Federal aid, it would be of value, and it would also be of value in the isolated communities of New Mexico where there are no doctors.

Dr. M. K. Wylder (Albuquerque) recited some experiences with Mexican midwives after they had received instructions and certificates from public health nurses in connection with work under the Sheppard-Towner Act, and made motion that the House of Delegates go on record as opposing Senate Bill 572 and H. R. 7525, known as the Jones-Bankhead Bill.

Dr. R. O. Brown (Santa Fe) suggested that Dr. J. R. Earp, Director of the State Board of Health, who was in the room, be asked to explain how the measure would affect the State.

Dr. J. R. Earp (Santa Fe) recalled that New Mexico is largely composed of counties that cannot afford to pay public health nurses and that, under the proposed Jones-Bankhead Bill, it would be possible to get funds from the Government and thus render assistance in furnishing nursing service in isolated communities, where such work is badly needed, since infant mortality in New Mexico is much higher than in other states, the rate being 132 per thousand, whereas no other state has a rate of over 100. Dr. Earp explained that the Bill had two divisions—one whereby the money would come directly from the Public Health Service, and the other whereby it would come from the Children's Bureau, and that the expenditure plans must be approved by a Council of three, to consist of the Surgeon General, a representative of the Children's Bureau and a representative of the Educational Bureau, disbursements to be made by the State Health Departments, after approval of its plans.

Dr. R. O. Brown (Santa Fe) explained that under the former Sheppard-Towner Act, money was appropriated to the states after budgets for the states had been approved by the Children's Bureau, and that a certain amount of freedom was allowed in determining how it should be used; that under the Jones-Bankhead Bill the State Board of Health would probably be allowed more latitude in the use of the funds allotted.

Dr. J. R. Earp (Santa Fe) stated that the money advanced under the Bill would be on the dollar for dollar basis, and, unless the State of New Mexico would increase its budget, he did not believe the Bureau of Health would benefit very much from it. He complimented the work of the public health nurses, stating that, with sixteen county health nurses, it had been possible to decrease the infant mortality rate from 144 to 132, and that the public health (Continued on page 386)

# Southwestern Medicine

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	EDITORIAL STAF	
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DR. H. A. MILLER		
	CAL & SURGICAL ASSOCIATION OF THE SOUTHWEST (Publication Committee)	
DR. WILLIS W. WAITE.		El Paso
DR. E. PAYNE PALMER		Albuquerque

## OUR SOUTHWESTERN MEETING

The annual meeting of the Medical and Surgical Association of the Southwest will return to Albuquerque this year. The dates selected are December 8, 9 and 10. That will avoid conflict with the Southern Medical Association and with the Radiological Society of North America, organizations which draw attendance from the Southwest. The chairman of the Program Committee is Dr. W. A. Gekler, of Albuquerque, and serving with him on this committee will be Drs. M. K. Wylder of Albuquerque, S. A. Schuster of El Paso, C. A. Thomas of Tucson, and David M. Davis of Phoenix. The Program Committee are planning to secure most of their scientific papers from the members of the Association, this year, rather than bring in many speakers from outside this district. Places on the program are open to any member of the Association who has material of interest to present.

Dr. W. R. Jamieson, of El Paso, is president of the Association; Dr. F. D. Vickers, of Deming, N. M., is president-elect. Full program is expected for the October issue of this journal.

# DR. BEN MOEUR—OUR NEXT GOVERNOR

Unless all signs fail, the next governor of Arizona will be a physician, a country practitioner, who has never before held or aspired to any political office. The many friends of Dr. Moeur in the medical profession of Arizona hoped against hope and voted against their expectations, when we supported his campaign. The political machine seemed too strong for defeat by any man untutored in politics as it is played in Arizona, with limited financial resources,

and comparatively unknown to the people of the greater part of the state. It is true that Dr. Moeur is known and respected by most of the citizens of Maricopa County, particularly of the "south side" where he has practised for more than thirty years, and in which part of the county he has been family physician in most of the homes. He also has a large consultation practice in and around Phoenix, but the practice of medicine does not make a man known to any section outside that in which he lives and works.

Dr. Moeur's success in the primary doubtless is due to two causes. The first of these is the dissatisfaction of people generally with present conditions in our national, state and local governments, and their determination to make as complete a change as possible. As usual, they acted with a vengeance when they did act, rejecting all candidates who had any affiliation, however remote, with the present state government, choosing the "amateur in politics" over professionals they could no longer trust.

The second reason is one which appeals to the writer. That is the instinctive confidence people have in Dr. Moeur's honesty and the good will which even brief contact with him engenders. The writer's first contact with him will illustrate this. As a young physician, newly located in Phoenix, he was called to attend a sick woman living northwest of the city. She asked for Dr. Moeur of Tempe as consultant, and he was communicated with and appointment made for the next day. Tempe was fifteen miles away and rapid transit in Phoenix in 1907 was by horse and buggy. In those days Dr. Moeur used a relay of double teams in his practice, often tiring out four pairs of fast trotters in one

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day, making long trips over the entire county. He arrived at the patient's residence on time, with a sweating team, and his courtesy for the young physician just starting practice will ever remain a bright spot in memory. He made his examination, inquired into the treatment proposed, made some suggestions, assured the patient she was receiving the best possible care, told her he would be glad to come back in consultation if this became necessary but he was quite sure it would not be, and went his way leaving a satisfied patient and a new friend.

Whether his votes came chiefly from those who want a change or from his old and new friends, both groups are united in the belief that he will carry into this high office the personal characteristics for which he is well known,—honesty, square dealing, fearlessness, and determination to serve people who place their trust in him. Those qualities and experiences which endear a family physician to the people he treats are, after all, not so bad to have in the governor of a sick commonwealth. Luck to you Dr. Ben!

## SHALL WE BE CONSISTENT?

"However the political scene may shift, facts and principles with reference to intoxicating liquor and the traffic in it remain the same.

"Alcohol is still a habit-forming, narcotic poison, striking at and striking down self-control, the last and most hardly won quality of human character.

"The liquor traffic is and always has been incurably lawless; and now just because of its shameless and open assaults on the law of the land, some of our citizens seek to free it from the shackles riveted upon it by the Eighteenth Amendment and the Volstead Act. After its long history of broken promises, it seems as if only a child could believe the asservations that, if so freed, it would obey the law, respect the rights of dry states, and never come back in the guise of the saloon.

"In view of these facts, we solemnly assert that we can never consent to our governments, national, state, or local, licensing the selling of beverages containing alcohol, a habit-forming narcotic poison, that we will never have part or lot in that proceeding, and that we will actively oppose it to the extent of our power.

"We also assert that we can never consent to our national or state governments going into the business of manufacturing or selling beverages containing alcohol, a habit-forming, narcotic poison, either directly or indirectly, that we will never have part or lot in that matter, and that we will actively oppose it to the extent of our rower. We declare our conviction that no possible financial revenue to the government resulting from the legalizing of the beverage alcohol traffic can ever make up for the moral degradation and destruction of human values inevitably resulting from that traffic."

This is a somewhat abbreviated resolution adopted by a large convention which met in San Francisco during the summer. It is presented here because it expresses the viewpoint of many medical men, including the editor of this journal. We strongly suspect that it was drafted by a physician. Medical men who accept the teachings of therapeutics and pharmocologic research are in cordial agreement with the statements that alcohol is a depressant narcotic and not a stimulant, that it is a poison to neurologic tissue, and that it is habit forming. They only differ in their belief as to whether such a narcotic poison can be safely taken or administered to large numbers of the people without material damage to physical or mental well being. Nor is there any essential difference in their belief on this score, because most physicians advance as their argument for a change from present conditions the statement that young people are using more alcohol and are, therefore, suffering immeasurable physical and mental damage. Henry Ford stated the simple cure for this condition when he advanced the opinion that the cure for alcholic ills is not more and more easily procured alcohol, but less alcohol.

We commend the statements of this resolution to the thoughtful consideration of physicians generally.

## EBER D. McKINLEY

(Alamogordo, N. M.)

We have failed to record the death on May 17, of Dr. Eber D. McKinley of Alamogordo, N. M., notice of which appeared in the Journal of the American Medical Association. Dr. McKinley was fifty five years old and had practiced in New Mexico since 1908. He was a member of the county and state medical societies, a Fellow of the American Medical Association and member of the Medical and Surgical Association of the Southwest. The cause of death was given as coronary embolism.

# JOHN S. B. WOOLFORD

(Roswell, N. M.)

Information has come of the death on July 4 of Dr. John S. B. Woolford, of Roswell, N. M. The cause of death is given as uremia. Dr. Woolford has been living in Roswell for a number of years, but not in active practice for some time. He was a Fellow of the American College of Surgeons.

# THE NEW MEXICO MEDICAL SOCIETY (Continued from page 383)

nurses try to work with the doctors and cooperate with them at all times.

Further discussion follow, d, with result that no action was taken on the motion.

Dr. R. O. Brown (Santa Fe) made motion that the President appoint a committee to study the problem of providing medical attention in the small itolated and rural communities and report to the President at a future date. Seconded by Dr. M. K. Wylder (Albuquerque) and carried.

The Secretary, Dr. Cohenour, read a letter received from the American Medical Association relative to benefits derived by veterans. No action was taken.

The President appointed as Committee on Necrology, Drs. M. K. Wylder (A'buquerque), Dr. F. H. Crail (Las Vegas), and Dr. R. O. Brown (Santa Fe).

Also, Committee to deal with isolated community problems. Drs. R. H. Pcusma (Rehoboth), R. O. Brown (Santa Fe), J. R. Earp (Santa Fe).

No further business arising, adjournment was voted at 2 p. m.

#### SCIENTIFIC SESSION

After call to order at 2 p. m., by the President, the Fraternal Delegate from Colorado, Dr. G. C. Lingenfelter (Denver), presented his credentials and expressed on behalf of Dr. Edward Delehanty, President, Colorado State Medical Society, congratulations and best wishes to the Society on its Fiftieth Anniversary, and extended a cordial invitation to all members to attend the Colorado State meeting to be held September 8-9-10, at Estes Park, Colorado.

Dr. W. S. Lemon, Rochester, Minn., presented the first paper on the program, entitled "Tuberculous Pleurisy with Effusion," dividing the subject into (1) "The Biologic and Investigative Aspect," and (2) "The Clinical Aspect." After carefully reviewing numerous experiments, Dr. Lemon advised, "It is possible to conclude that sensitization in man is the result of infection with the bacillus of tuberculosis, which excites an immediate response, and sets in motion a defense mechanism that is not specific for tuberculosis but is employed for all invading substances, although subject to variations required by such differences as may be included in the terms of dosage and virulence. It would seem that the initial lesion, a tubercle, is an immediate reaction, that involvement of the adjacent lymph nodes becomes possible by employment of the lymphatic vessels required for disposal of all removable organisms, and that the phagocytic defense is supplied, first, by polymorphonuclear leukocytes which are soon displaced by mononuclear cells, and that these become the characteristic cell of tuberculosis. It would appear that, in man, sensitization by the presence of tubercle is almost universal, and that all cases of pleural effusion seen in man are evidences of imbalance or increased permeability, made possible by the reactions of bacteria or by the products of bacteria on a sensitized pleura." Under "Clinical Aspect," Dr. Lemon concluded: "When advising patients of the diagnosis, of the care, and of the prognosis, of pleurisy with effusion, it is well to stress the importance of the element of time, both of the initial acute illness and of the period of observation. Patients should be advised of Korns' experience with his Chinese patients; namely, that as a rule: 'Those who rest most completely and longest have done well, whereas, conversely, those who have paid little attention to rest are now showing signs of active pulmonary tuberculosis. The conclusion seems justified that serofibrinous pleurisy of obscure origin, after proper means have been used to exclude other causes, should be considered as a manifestation of tuberculosis and should be treated as such."

Discussion was opened by Dr. L. S. Peters (Albuquerque), who expressed his thanks and appreciaion of Dr. Lemon's paper, and his interest in the experiments conducted, which dealt with the introduction of foreign substances into the pleura, producing by their reaction the clinical syndrome of pleurisy with effusion, and which bear out more or Liss what he has encountered in pneumothorax work, as, in those cases which have been followed up with f voroscopic examination and have been observed over a considerable period of time, an effusion has been shown at s me time or other. "We see a number of cases in which the empyema follows lobar pneumonla and is not of the tuberculous type. In the course of my pneumothorax work, I have had a case of double effusion at the same time-effusion on the pneumothoric side and then on the parallel side. There have been only nine or ten such cases reported in the literature. It is not uncommon to see these cases of idiopathic pleurisies, showing pleurisy on one side, then being well for a number of years and then developing effusion on the opposite side. In regard to treatment of these tuberculous pleurisies with effusion, it can be summed up very well by saying, the less we do the better off they are. The average patient with pleurisy with effusion usually gets along all right with uneventful recovery in a reasonable length of time and, unless it is necessary to relieve pressure symptoms, it is not wise to aspirate."

Dr. Frank E. Mera (Santa Fe) stated that, "It is very true that we now rarely get pleurisy with effucion; years ago they were very common but that was before the idea of rest had permeated throughout the profession. Rest is very important in the early treatment of pneumothorax cases, and by this means we escape quite a few of these bothersome cases. As to the treatment of effusion, I believe, if I have erred, I have erred in waiting too long to aspirate, on account of the danger of secondary infection, as sometimes we get adhesions we might not otherwise have, thus spoiling the case as far as pneumothorax is concerned."

Dr. R. O. Brown (Santa Fe) expressed his enjoyment of Dr. Lemon's paper and remarked that one of the things which struck him particularly was the

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fact that the reaction which occurs when a nonspecific substance is injected into the lungs or pleural cavity is essentially the same as that of a specific organism, such as tubercle bacilli or a live organism; thus we find the process are really less complicated and obey a general rather than a specific law. Another point made was that, in the diagnosis of pleural effusion (which may be mistaken as influenza-pneumonia), some preceding condition might be responsible for it, for instance a localized pneumonia might have broken down some tubercles, and, therefore, pleurisy with effusion might be a complication rather than cause of disease.

In closing the discussion, Dr. Lemon thought it would be confusing rather than helpful to attempt to consider all the various problems that arise in a case in which there is tuberculous pleural effusion. "It is proper, however, to express an opinion regarding removal of fluid. From the cases studied, it is evident that serious injury can be done by hasty or ill-considered operation, or by the use of open drainage, if patients have either a serous or purulent effusion which, on culture, does not yield pyogenic organisms. No method of open drainage should be used for sterile fluids, regardless of their appearance, and no harm will be done if interference is delayed until the results of a culture can be obtained. From the standpoint of treatment, it is essential that all cases in which fluids are such as have just been described should be considered tuberculous. and I have felt that there were five working rules that might be used as indications for removal of fluid:

- "1. Fluid may be removed by needle, for laboratory examinations, such as cultures for pyogenic organisms and organisms of tuberculosis, and for inoculation of animals by the methods that have been considered in the paper.
- "2. If symptoms of pressure are present, producing respiratory or circulatory embarrassment, fluid should be removed. The symptoms usually are dyspnea, cyanosis, or tachycardia.
- "3. When the chest contains so much fluid that it has caused mediastinal displacement, a sufficient amount may be removed to rectore the mediastinum approximately to its normal situation.
  - "4. Pleural effusion that fails to be absorbed af-

ter an interval of time that would seem to be adequate for its absorption, may be withdrawn with justification.

- "5. When the fluid is situated bilaterally, it should be removed. Occasionally, it is necessary to remove fluid more than once. Rarely, fluid needs to be r moved on a large number of occasions. The indications, however, are the same in every instance.
- "I have had no experience with removal of fluid and replacement with oxygen or air. There are theoretical grounds for believing that such a procedure might be of value, but my patients have responded a isfactorily to removal of the fluid only. Clinical experience also has shown that, whereas aspirating a large amount of fluid seems to stimulate further

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exudation, aspirating a relatively small amount results in an augmented rate of spontaneous absorption. It is my experience that 5 to 20 per cent of patients who come with draining sinuses apparently resulting from simple, chronic empyema, are in reality suffering from tuberculous empyema. Obviously, these pleural cavities are infected with various types of organisms, and, even though tuberculosis may be shown to be present, yet the patients must be treated as are others with chronic empyema. The results of treatment, however, are not as satisfactory as in nontuberculous cases; only a limited number of patients recover without a persistently draining sinus."

Following Dr. Lemon's discussion, paper was presented by Dr. C. W. Irish, Pasadena, Cal., on "Neurological Diagnostic Criteria in Diseases of the Brain." Briefly summarized, Dr. Irish's paper presented practical diagnostic points in diseases of the brain, and: (1) A classification of cerebral circulatory disturbances, with some differential diagnostic aids particularly as to type and location of acute vascular lesions. (2) The various types of meningitis were discussed and the prominent symptoms at onset and most common neurological signs in their order of frequency, in a number of cases of the epidemic type, reported. A comparative differential chart of spinal fluid findings in the various types was included and the methods of administration and reported results of different types of treatment reviewed. Frequent brain dehydration and drainage and the early use of large amounts of serum early in the epidemic type was emphasized. (3) A tentative classification of encephalitis has been given and attention called to the diversity of symptoms in the chronic epidemic type and to its usual syndrome in children. (4) A few differential points in diagnoses of brain abscess, tumor, and the various types of traumatic cerebral hemorrhage have been mentioned and Kennedy's criteria of brain trauma given. (5) Diagnostic aid is offered in syphilis of the brain by examination reports of the cerebrospinal fluid and more liberal use of tryparsamide and fever therapy has been advised. (6) Disorders of motility due to



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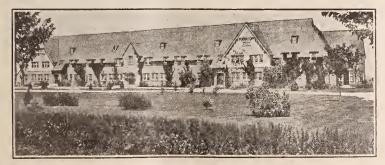
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basal ganglia disturbances and the usual resulting syndromes from their impairment and the cerebellar syndrome have been briefly described.

Discussion was opened by Dr. A. B. Stewart (Las Vegas, N. M.), who expressed his appreciation of Dr. Irish's paper and complimented him on his beautiful resume of diagnostic criteria of all diseases of the brain, which left absolutely no criticism. He advised that the paper be read more than once, when published in SOUTHWESTERN MEDICINE, in order that its full extent might be grasped and the thoroughness with which Dr. Irish covered the field fully comprehended.

Dr. A. H. Vogt (Albuquerque, N. M.) stated that he was very glad to hear such an excellent and exhaustive paper, and considered that the treatment of neuro-syphilis should fall into three groups, one group being benefited by the use of malaria; the second group by the use of triarsphenamine of bismuth, and the third by the old spinal puncture, which now seems to have fallen into disuse. Dr. Vogt suggested that the economic loss caused by this disease be seriously considered and that treatment be demanded for the protection of society.

Dr. F. D. Vickers (Deming) asked in regard to treatment by electric thermotherapy.

In closing the discussion, Dr. Irish stated that, in regard to electric thermotherapy, he did not believe it as acceptable as other forms of thermotherapy; that he was very appreciative of the discussion, as it had been his endeavor to stimulate interest in neurological problems.

Adjournment followed until 8 p. m., to permit a visit to the Laboratory of Anthropology and afternoon tea at the home of its director, Dr. Nusbaum.

#### EVENING SCIENTIFIC SESSION

At 8 p. m., the meeting was called to order by the President, Dr. F. D. Vickers (Deming), who announced a paper by Dr. J. W. Hannett, Albuquerque, N. M., entitled "The Surgeon's Responsibility in Choosing an Anesthetic." Dr. Hannett stressed the importance of choosing the proper anesthetic in surgical cases and expressed the belief that all anesthetists should be graduates of medicine and be specially trained.

In discussion, Dr. P. G. Cornish, Jr., agreed with Dr. Hannett as to the extreme importance of the use of the proper anesthetic in any surgical work, as there is nothing more discouraging, particularly in abdominal surgery, than to have the patient given an unsatisfactory anesthetic. Dr. Cornish mentioned the fact that in the Southwest it is necessary to use a great variety of anesthesia for the reason that a large percentage of operations are done upon patients suffering from tuberculosis, and who are, therefore, poor surgical risks, so that the surgeon must be extremely careful in his choice of anesthetic. He believes that spinal anesthesia is the best anesthetic in the majority of poor risk cases.

Dr. E. W. Johns (Albuquerque, N. M.) complimented Dr. Hannett upon his paper, but took exception to the statement that all anesthetists should be graduates of medicine and should be specially



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trained, stating that many nurses make excellent anesthetists and give inhalation anesthesias in many of the large clinics, and, therefore, in his opinion, anesthetists could be developed from trained nurses.

In closing the discussion, Dr. Hannett agreed with Dr. Johns as to the use of non-medical graduates, at some of the larger clinics, as anesthetists, but considered that, for the comfort of the surgeon in the long run, in smaller places at least, it would be better to use doctors, as he felt strongly for keeping the practice of medicine among medical graduates and such procedure might save considerable cmbarrassment in case legal questions should arise.

Dr. W. D. Sansum, of the Sansum Clinic (Santa Barbara, Cal.), was then introduced by the President, and delivered an address on "The Treatment of Indigestion, Underweight, and Allergy, with the Old and New Forms of Digestive Agents.' Briefly summarized, Dr. Sansum's conclusions were:

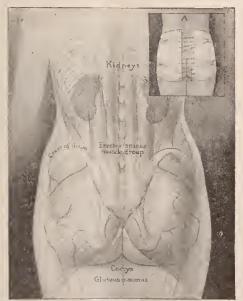
(1) Errors in digestion on an organic basis are fairly common. (2) Simple, harmless digestive aids are now available and when used afford worth-while benefit. (3) Chronic underweight may be due to the inability to digest enough food. (4) Such patients, when given suitable digestive aids—such as citric acid, pepsin, enteric coated pancreatin and takadiastase as indicated—together with an adequate diet, improve in a very satisfactory manner. (5) All forms of allergy may be due, in part at

least, to the inability to completely digest the complicated protein molecule, the absorption of which may cause sensitization. (6) Allergic patients usually improve slowly but surely when given protein digestive aids. Interesting case reports formed a part of Dr. Sansum's lecture.

Discussion was opened by Dr. R. O. Brown (Santa Fe), who made reference to cases of asthma and hay-fever, who apparently come to the Southwest to try climate as a last resort and are benefited by the altitude and sunshine if residence is continued over a considerable length of time, only to relapse after returning to a lower altitude. He affirmed, however, that, if such residence was continued for a period of eight to ten years, many times these persons could return to their former homes and live in comparatively good health.

Dr. C. H. Gellenthein (Valmora, N. M.) restricted his discussion to the underweight, which he gave as an important and common symptom of tuberculosis, stating that, when accompanied by fever and cough, these were sufficient for a diagnosis of tuberculosis. The cause of this loss of weight is probably due to poison, but other factors must be considered. Since this is essentially a wasting disease, in order to correct this underweight, the cause must be found, rather than the food supply be increased. A normal amount of food with enforcement of rest will, in the majority of cases, produce a steady gain

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New York 330 Fifth Ave. in weight. He agreed with Dr. Sansum that underweight may be due to inability to digest.

Dr. Hugh T. Jones (Los Angeles, Cal.) asked as to the benefit sunshine might have in these conditions, saying that, while high altitudes usually have much more sunshine than low ones, yet California is known as the "Sunshine State," and he would like to know Dr. Sansum's experience in cases which come to California and if they are benefited by the sunshine without any other treatment.

Dr. Sansum, in closing the discussion, stated that sunshine helps everybody; that a very interesting experiment is now being conducted at the Sunshine Cottage, where the children under tratment are being given sunshine practically all over their bodies, with benefit in nearly every case. From a survey undertaken for this particular meeting, Dr. Sansum estimated that about one-third of patients, after being built up to normal weight, no longer needed digestive aids.

Dr. P. G. Cornish, Jr., (Albuquerque, N. M.), in a very interesting paper on "Some Phases of the Surgical Treatment of Pulmonary Tuberculosis," described two operations which he is performing with marked success in cases where there is a large open cavity and where pneumothorax has been tried and has failed. These operations, intrapleural pneumolysis and extrapleural pneumolysis, are designed to save patients from the larger disagreeable operation of thoracoplasty. Slides were shown in illustration.

In discussion, Dr. J. W. Hannett (Albuquerque) doubted if the profession at large realizes the seriousness and dangers from open cavities in the lung, asserting that open cavities are a constant menace.

Dr. L. S. Peters (Albuquerque, N. M.), continuing the discussion, stated that many of the medical profession have gained the idea apparently that tuberculosis is a curable disease, when, as a matter of fact, it is not, and the sooner this is realized and patients are taught to live with and despite their tuberculosis, the better off they will be. He had no quarrel with rest treatment and maintained that every patient should be given a chance to see what nature could do for his tuberculosis, but, after two or three months' bed rest, if no improvement or shrinkage in the cavity occurred, compression treatment should be advocated.

In closing, Dr. Cornish stated that it seemed probable many heads of tuberculosis sanatoria were not fully aware of the more recent methods of treatment of cavities, citing a case coming from an institution in a middle-western state, who, when thoracoplasty was advised, objected on the ground that he had been told at the former institution that this operation carried a mortality of more than 50 per cent. The Doctor stated that their mortality in these operations has been zero and the percentage of postoperative empyemas very low; hence, he felt this method of treatment extremely safe, as, in every case in which a cavity has been closed, it has remained closed and patients have remained free of symptoms.

The concluding speaker on the day's program, Dr. Lee M. Miles (Lovelace Clinic, Albuquerque, N. M.), presented a paper on "Inflammatory Stricture of the Ureter in the Female," citing six case reports as typical of the condition, stating that seven other cases of stricture had been diagnosed and treated during the past six months at the Clinic; hence, the fact that so many cases have been encountered in so short a period of time, indicates the condition is far from uncommon. The condition is characterized by rather indefinite but suggestive symptoms and quite definite physical findings. Stricture of the ureter can be definitely diagnosed by a systematic search of the upper urinary tract and, in most instances, treatment is successful in relieving symptoms and in dilating the narrowed zone of the ureters so as to permit free flow of urine to the bladder, thus preventing further damage to the kidneys. Illustrative slides were also presented.

In discussion, Dr. Harold T. Low (Pueblo, Colo.) stated that it has been the custom in his Clinic, in making diagnosis in all cases of abdominal pain, to consider urethral stricture, which is a very frequent condition, but that 33 per cent of all renal cases give absolutely no symptoms referrable to the urinary tract, which renders diagnosis difficult.

Dr. Dwight W. Rife (Santa Fe, N. M.) stated: "This condition is something we general practitioners will probably continue to miss because we are not G. U. men, and take the human body as a whole and not the urinary tract as being responsible. However, some general men have to do this kind of work, as their patients may be neither inclined, nor have sufficient funds, to visit specialists. Dr. Miles is certainly to be congratulated on his splendid paper and slides. As to the matter of focal infections, a great many inflammatory foci are due to kinking of the ureter."

In closing discussion, Dr. Miles mentioned that most of these cases have had multiple operations performed, gallbladder, salpingotomy, etc., and immediately after operation the patient seems improved, which would signify that the best treatment in any case is rest in bed. Soon after being up and around, following operation, however, these patients complain that the old pain has returned. "I believe that symptoms and physical findings of disease of the urinary tract are at least suggestive enough so that every general practitioner ought to have a definite idea that there is disease of the urinary tract regardless of urinary findings, which are suggestive but not necessarily the accompaniment of urinary tract disease. We could save patients lots of expense not to put them through exhaustive G. U. studies, x-ray findings, etc., if we would jump at the conclusion of urinary tract involvement and investigate that first, instead of after we have exhausted the patient's strength and finances. My particular point has been to diagnose these strictures early and treat them before extensive kidney damage results."

Adjournment until 9:30 a. m., May 20, 1932.

Friday, May 20, 1932 SCIENTIFIC SESSION—LENSIC THEATRE

The opening paper of the morning session was by Dr. A. Soiland (Los Angeles, Cal.), on "Management of Cancer of the Breast." Using a special sound picture, Dr. Soiland discussed and showed strides that have been made in the treatment of this condition, by means of platinum covered radium element needles, stating: "For breast cancer we employ needles varying in length from one to six centimeters, and in thickness from two to three millimeters. Each needle contains from one to four milligrams of radium element, determined by length, and these needles are plunged into the tissues surrounding the tumor, in positions which will place all malignant-cell-bearing areas under a direct crossfire. If we are dealing with a radio-sensitive malignant mass, a definite clinical cure may be expected from this method of treatment."

Dr. W. S. Lemon (The Mayo Clinic, Rochester, Minn.) continued with a paper on "Primary Carcinoma of the Bronchus," in which he brought out the value of bronchoscopic examination, which lends itself well to the diagnosis of those forms of benign tumors whose symptoms and signs may closely simulate those of carcinoma. Such tumors include adenomas, fibromas, fibrolipomas, and polyps, and to these may be added those malignant polypoid tumors that may be encountered and are the only malignant growths known to us that can be removed

through a bronchoscope. The presence of such tumors in each case in our experience was suggested by a hemorrhage of unknown cause. More unusual was the presence in one caes of a dermoid which gave the appearance, symptoms, and signs of a malignant tumors, with the exception of the characteristic shadow in the roentgenogram. It was removed by repeated coagulation. The visualization of a lesion, the removal of tissue for histopathologic diagnosis, the removal of a polypoid growth, or the coagulation of benign growths that cannot be removed, are not the only purpose of bronchoscopic examination. Carcinomatous-like lesions produced by foreign bodies such as bone, or calcareous material, or true stone, in the lung, can be distinguished from carcinoma. In these ways, the examination complements and completes the clinical survey of interbronchial lesions and makes a diagnosis possible without the involvement of serious risk."

Concluding the symposium on cancer, Dr. C. G. Toland (Los Angeles, Cal.) spoke on "The Object of the Cancer Commission of the State Medical Association," and told of work being done in California, urging that such commissions be appointed by State Medical Associations. He stated that the menace of cancer has never been more acute than at the present time. It recently has jumped from sixth to second place as a cause of death in the United States and its apparent yearly incidence has increased by two per cent. Never has there been a more concert-



ed and united attempt, on the part of layman and physician alike, to control canter, than today.

Opening the discussion on the symposium, Dr. J. M. Flude (Los Angeles, Cal.) complimented the speakers on their excellent papers on the clinical aspect of the cancer problem and, as Field Representative of the American Society for the Control of Cancer, New York City, urged the formation of clinical groups, to act as consulting boards for doubtful cases of cancer occurring in their local communities. He stated that in the past year a number of such clinical groups have been organized throughout the United States. It is proposed that in each city there will be at least one such group, while state programs have already been inaugurated in Massachusetts, New York, Pennsylvania, California, Colorado, Oregon, and Wisconsin.

Dr. Hugh T. Jones (Los Angeles, Cal.) wondered why he, an orthopedic surgeon, was asked to discuss cancer of the breast and cancer of the bronchus, but cited a case of cancer of the breast where operation had been performed some thirteen years ago, x-ray showing very profuse metastasis of carcinoma to the bones. As we depend on the roentgenologist and men giving x-ray treatment in connection with the surgeon, so do we depend upon them to give palliative relief of pain in these very painful metastases.

Dr. C. H. Gellenthein (Valmora, N. M.) asked if carcinomas of the bronchus in region of the lung are more prone to metastases than others,

Further discussion was entered into by Dr. E. H.

McIntyre (Santa Fe, N. M.), who urged careful and more accurate completion of death certificates insofar as cause of death was concerned, so that statistics on the subject would be more reliable. He also spoke in favor of the formation of cancer commissions by State Medical Societies, as outlined by Dr. Toland.

In closing, Dr. Toland stated that the object of the Commission is to correlate the information on hand regarding cancer before the medical profession and then, as soon as possible, to start to work to educate the public and give it the benefits of the knowledge attained.

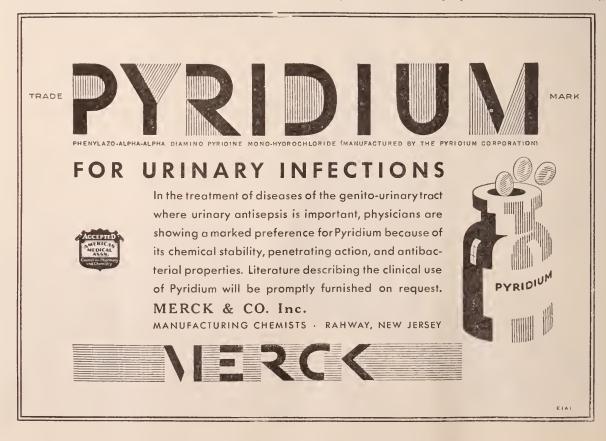
Dr. Lemon in closing stated that, in the cases cited in his paper, 60 per cent were of the squamous type of carcinoma, 35 per cent were of the adenocarcinomatous type, and the rest were undifferentiated. Sixty per cent were grad 4, or very virulent, while 30 per cent were grade 3. About 3 per cent of the cases have no symptoms whatever and are accidentally discovered.

Adjournment until 2 p. m., for luncheon. (Continued in next issue)

#### BOOK REVIEWS

SYMPTOMS AND DISEASES APPLIED: Questionnaires; Differential; Diagnosis; Mathematical Diagnosis. W. L. Kitchans, M. D. Texarkana, U. S. A.

Perhaps the best understanding of this book will be presented in the words of the author taken from his preface: "In the preparation of the following



pages, I . . . present . . . the most common symptoms and diseases found in the daily practice of the general practitioner, whereby, all following this plan of diagnosis will arrive at, and agree on, the same diagnosis, 'whether it be right or wrong.'"

As to the use of the book he says: "Question your patient thoroughly as to his or her chief complaints, giving the time, character, frequency, appearance, location, etc., according to the complaints. Number them as is shown in part one. . . . Laboratory tests you will number in the same manner as for the subjective symptoms. Now select the most positive, outstanding or diagnostic symptom, by number, and refer to that symptom which is listed on the same page in part two, as the number of the symptom; here you will find a list of diseases which should contain the diseases producing this symptom in your patient, and thereby eliminate all diseases except the ones found listed under this symptom; now you will select another diagnostic symptom and make reference to it as above and select the discase or diseases that appear here and also under the first symptom, and eliminate all diseases that do not appear under both symptoms. In this same way work out all the diagnostic symptoms and eliminate all discases except the most applicable ones, making your positive, possible, and probable diagnosis or complications."

The reviewer is considerably at a loss to know just what to say regarding the practical value of this book. It is different from anything he has encountered—certainly for this reason should not be condemned. He considers that he has not been able to give it sufficient study to pass judgment upon it. O. H. B.

SELECTIONS FROM THE PAPERS AND SPEECHES of John Chalmers DaCosta, M. D., LL D.; Samuel D. Gross, Professor of Surgery at the Jefferson Medical College, Philadelphia; W. B. Saunders Company, Philadelphia and London; 1931.

This is a highly interesting collection of papers and addresses on a variety of subjects. The reviewer found the book so interesting that he read it from cover to cover. The addresses on The Trials and Triumphs of the Surgeon and Baron Larrey, the reviewer found especially interesting. Had the author rewritten the subject matter and avoided repetition, making a much smaller book, he would have made it still more interesting. From the work is gathered a splendid picture of the man DaCosta.

O. H. B.

TABLES OF FOOD VALUES, by Alice V. Bradley, B. S.; Supervisor and Instructor of Nutrition and Health Education, State Teachers' College, Santa Barbara, California. The Manual Arts Press, Feoria, Illinois. Price \$2.00.

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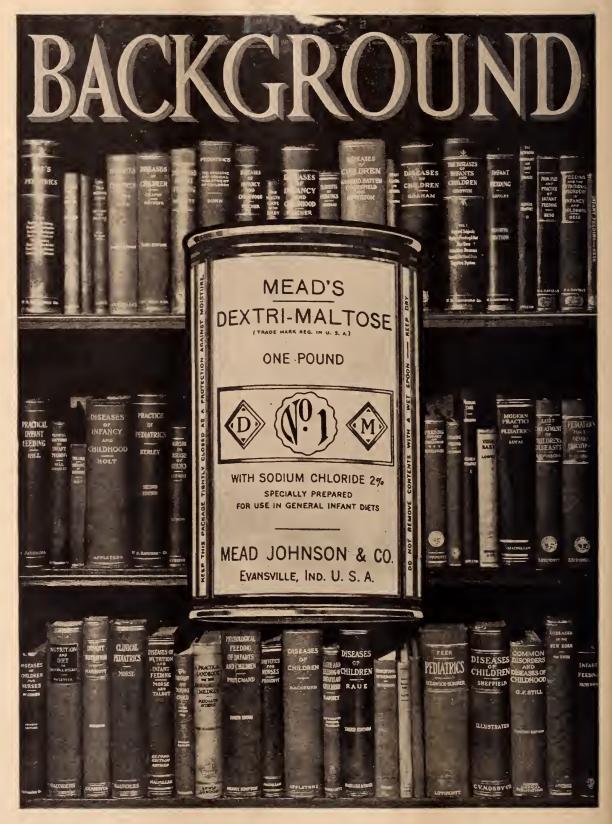
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VOL. XVI.

OCTOBER, 1932

No. 10

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# NEUROLOGICAL DIAGNOSTIC CRITERIA IN DISEASES OF THE BRAIN

CULLEN W. IRISH, M. D. Pasadena, California

(Read before the New Mexico Medical Society at its Fiftieth Annual Meeting, Santa Fe, N. M., May 19-21, 1932.)

A discussion of diagnostic points in diseases of the brain is always apropos when one considers the frequency with which these conditions, often with diffuse, varied, and puzzling symptomatology, are met, their usual seriousness and grave prognoses, and consequent difficult management and treatment.

Much clinical and laboratory work is constantly being reported which adds to our fund of knowledge regarding brain diseases and offers aid in their more accurate diagnosis and subsequent more able treatment. Studies in brain pathology have assisted in clearer understanding of the signs and symptoms which arise in cerebral vascular changes and accidents and in the various localized and diffuse infections and degenerative processes of the brain and its covcrings. Examinations of the cerebrospinal fluid with pressure readings, frequently offer differential aid while encephalography and ventriculography are often most helpful in differentiation and localization of brain pathology.

Animal experimentation by Ranson, Davis, Pollock and others, has added to the knowledge of conditions arising from basal ganglion, cerebellar and midbrain disturbances.

The neurosurgeon and neuropathologist have contributed much the past few years with their close correlation of operative disclosures with pathological studies, which give more accurate and helpful information by means of the newer nerve-cell-staining methods of Hortega and vital stains of frozen sections.

The attempt has been made in this presentation to

offer practical aids in differential diagnosis, without specialized data which would more aptly apply in the highly specialized clinics having the assistance of comple ely equipped laboratories in charge of highly skilled workers, and the frequent consultations of highly trained confreres in the associated specialties of medicine and surgery.

# CIRCULATORY DISTURBANCES OF THE BRAIN

1. Cerebral Anemia

Acute and chronic Local (intermittent claudication)

2. Cerebral Hyperemia

Temporary and prolonged

Sunstroke

3. Acute Cerebral Vascular Lesions

Thrombosis—Hemorrhage—Embolus Pseudobulbar Palsy

4. Acute Bulbar Palsy

(Posterior inferior cerebellar artery syndrome)

5. Cerebral Arteriosclerosis

Cerebral symptoms following extensive loss of blood are difficult to differentiate from shock, but increasing evidence favoring vasomotor vessel innervation allows the possibility of both general and cerebral anemia.

In mild acute anemia the patient has air hunger and syncopal attacks, and complains of noises in the ears and spots before the eyes. The skin is pale, cold, and moist; respiration is rapid, shallow, and irregular; and the pulse is rapid and of poor volume; usually being secondary to cardiac impairment or sudden mental shock. When more severe, as from extensive sudden loss of blood, the onset is sudden, with roaring in the cars, marked weakness, dizziness, possibly nausea and vomiting, apathy followed by deepening coma and death, if the blood loss is sufficiently great. The same progression of symptoms may occur in heart failure with sudden loss of position.

In chronic anemia, as seen in leukemia, pernicious

anemia, cachexia, or repeated loss of blood, similar varying symptoms may occur, with drowsiness, apathy, and the expression of delusions or hallucinations. General supportive measures and treatment of the underlying causes are indicated.

Local cerebral anemia due to transient spasm and closure of an artery temporarily deprives a part of the brain of its blood supply, with symptoms demonstrating the functions of the area involved. This condition may result from intermittent claudication of the cerebral vessels, as is sometimes seen in cerebral arteriosclerosis, from pressure of a tumor, may occur in endarteritic or sclerotic diseases of the cerebral vessels, or present itself before the onset of an actual cerebral thrombosis. Transient symptoms, as aphasia, momentary facial twitchings, temporary palsies and sensory disturbances, may thus appear long before more severe lesions cause permanent evidence of cerebral impairment.

Temporary cerebral hyperemia may result from severe exercise in hot weather, alcoholic intoxication, inhalation of some gases, intense excitement, or sun stroke. Chronic hypertension and polycythemia may cause a more prolonged congestion of the cerebral vessels, when the usual symptoms of flushed face, throbbing temples and ear drums, a sense of head fullness and warmth, dizziness and headache, with occasional disturbances of consciousness, insomnia, temporary palsies, and, rarely, convulsions, may occur.

Acute Vascular Lesions of the Brain (Apoplexy). When an acute cerebral vascular insult occurs, the first important factors to determine are the type, extent, and location of the lesion, in the order named. Determination whether the condition is due to thrombosis, hemorrhage, or embolism, decides the immediate treatment to be instituted. Contrary to usual opinions, cerebral thrombi occur more frequently than hemorrhages. A thrombus is more liable to occur when the general circulation is at its lowest tension, while hemorrhage is more likely following exertion and physical or emotional strain. Jorgenson" after lumbar punctures in 140 patients with cerebral hemorrhage or thrombosis, concludes cerebrospinal fluid pressure above 300 mm. of water almost always indicates hemorrhage; also hemorrhage or xanthochromic fluid and increased amount of protein, even when the fluid is not bloody or yellow, indicate hemorrhage. As cerebral hemorrhage is more frequently soon fatal in spite of attempted remedial measures, without definite evidence to the contrary, the more favorable results are likely from treatment

of the condition as a thrombotic process, with recumbent position, external heat and intravenous glucose. If the blood pressure is high and the left heart embarrassed, venesection may be indicated, and socalled cardiac scimulants withheld.

On the other hand, stimulation of the circulation, sedatives reducing restlessness, and the lowered head, may lessen the amount of post-thrombotic suffering, and limit further ensuing cerebral damage which might occur. Also hemorrhage may follow thrombotic softening, the danger of which is increased by restlessness and hyperactivity. With increasing hemorrhage, repeated lumbar punctures and glucose intravenously lessen the intensity of pressure upon the brain12 with its resultant cerebral damage, irritation causing severe head pain, delirium, mental confusion and clouding and the onset of coma, and death, if it is sufficiently long continued. Kennedy and Wortis<sup>13</sup> state that caffeine sodium benzoate, hypodermically or intravenously, reduces increased intracranial pressure promptly.

It is doubtful if cerebral embolism may occur without endocarditis—from vegetations on the heart valves, particularly in mitral stenosis, or, more rarely, from a small embolus dislodged from the pulmonary vein or the aorta. Part of a thrombus in a larger vessel may break off and lodge in a more terminal cerebral vessel, and still more rarely a calcareous particle may be dislodged from the atheromatous walls of an artery. Occasionally bacterial emboli, circulating in the blood stream, may lodge in a cerebral vessel, but encephalitis or brain abscess is then more likely to result.

It is questionable whether any prophylactic treatment of corebral vascular lesions is effective, except untisyphilitic treatment where that disease is present, though syphilitic thrombosis occurs despite vigorous antiluetic treatment. Repeated lumbar puncture is indicated when blood appears in the spinal fluid, particularly in intraventricular bleeding, in which condition signs and symptoms are usually rapidly and seriously increasing unless the pressure is thus lessened.

The extent of cerebral involvement is usually shown by the severity of symptoms—coma lasting over 24 hours, deepening coma, hyperpyrexia or markedly subnormal temperature, indicating severe cerebral injury and a poor prognosis. Cerebral hemorrhage<sup>10</sup> probably does not cause immediate death—that is, in less than one hour—even when the hemorrhage is into the pons or ventricles.

As to location, no part of the brain is exempt from

thrombus or hemorrhage, and few from embolus. The most frequent locations for hemorrhage are in the lenticulostriate artery—the artery of apoplexy, and in the lenticulo-optic artery. Emboli usually lodge in terminal vessels or in the angles of bifurcation of the carotid, vertebral and sylvian arteries, serving as points for thrombotic processes.

The middle cerebral artery is frequently occluded. Hence, the most common brain involvement is of the external and internal capsules, the thalamus and striate body. The usual ensuing hemiplegia is a corticospinal tract lesion which frequently may be differentiated from the more transient paresis of diabetic and uremic coma, acute toxic condition, alcohol, and so forth, cerebro-arteriosclerosis, encephalitis, syphilis, and paresis, with the aid of appropriate laboratory tests and available history. In determining the location of the lesion from the paralysis shown, and in differentiating it from other types of paralysis, it is helpful to remember: (1) movements, not muscles, are affected; (2) naturally, unilateral movements are most affected; and (3) more highly specialized movements are more affected than those more automatic; for example, impairment of emotional facial movements is not noted, but voluntary facial movements show the weakness; eye closure may be proper, but resisted lid movements are poorly accomplished; also, the patient may be unable to close the eye on the affected side without the other closing at the same time. The protruded tongue may deviate toward the side of the lesion, but phonation, mastication, and deglutition are properly performed. Neck and trunk movements are little affected.

Involuntary movements occasionally occur in vascular hemiplegia, as does also pain, which is usually arthritic, due to the fact that greater strength of the flexors than of the extensors results in contractures; bu the pain may be thalamic in origin. In left-sided cerebral le ions in right-handed individuals, some form of aphasia is usually present with the right hemiplegia, due to the proximity of Broca's area, the center for speech, to the motor area. Crossed hemiplegia may occur with a lesion in the quadrigeminate body, shown by a third-nerve palsy with paralysis of the face, arm, and leg of the opposite side. In the pons with a branch of the basilar artery involved, there may be paralysis of the face on one side and of the arm and leg on the opposite. Double hemiplegia may result from a single lesion in the pons where the two pyramidal tracts are in close proximity, or from two lesions in the internal capsules of both hemispheres, the latter giving the syndrome of pseudobulbar palsy—bilateral hemiplegia with dysarthria, dysphagia, impaired mastication, involvement of the truncal musculature and impaired sphincter control.

Acute bulbar palsy is usually due to thrombosis or hemorrhage of the posterior inferior cerebellar artery, manifested, if not sufficiently severe to be rapidly fatal from cardiac or respiratory failure, by flaccid lower-motor neuron paralysis of the lower cranial nerves, with dysarthria, dysphagia, paralysis of the palate, pharynx, larynx, and tongue. With the lesion more cephalad, contralateral monoplegia, bilateral hemiplegia, homolateral cerebellar ataxia, varying sensory symptoms as bilateral facial anesthesia, on account of each sensory trigeminal descending root containing fibers for both sides of the face, may occur, depending upon the location and extent of the involvement. Obviously, great care is necessary in feeding a patient with paresis of the throat muscles, to avoid an aspiration pneumonia.

Cerebral arteriosclerosis gives primarily psychotic symptoms, but should be included in a discussion of cerebral circulatory disturbances particularly to emphasize two points: (1) the fact that it may exist without evidence of general, or elsewhere localized, arteriosclerosis, and may be localized in but one, or a portion of one, cerebral vessel, and (2) that it should be considered in individuals past forty who complain of headache, dizziness, noises in the ears, lack of ability to concentrate, memory impairment, irritability, emotional instability, restlessness, and similar symptoms, with or without hypertension, where there might be a tendency to diagnose the condition as functional (psychoneurotic). The progression of symptoms may be manifested by transient palsies, aphasia, abnormal movements and sensory symptoms. Hallucinations and delusions, particularly of infidelity, may occur; memory may become much impaired, followed by defects of all the higher faculties, and progressive mental deterioration to dementia resembling senile dementia in many respects, may follow. But usually it appears at an earlier age, and is more acute in onset and rapid in progression, with a tendency to focal signs of involvement. The fundal vessels may be quite sclerotic. Pathologically numerous disseminated areas of softening and atrophy are found, with necrosis, fatty infiltration, senile plaques in the cortex and degeneration of nerve cells.

Alzheimer's disease, or presenile psychosis, is a severe, rapidly progressive dementia, occurring at an earlier age than senile dementia, characterized by marked memory defect, disorientation, hyperactivity,

and, frequently, irritability, probably arteriosclerotic in origin.

#### **MENINGITIS**

- 1. Epidemic cerebrospinal.
- 2. Tuberculous.
- 3. Purulent.
- 4. Acute serous.
- 5. Acute spinal leptomeningitis.
- 6. Chronic cerebral leptomeningitis.
- 7. Acute spinal meningitis.

The brain and spinal cord are completely covered by the leptomeninges, the pia and arachnoid, closely approximated, continuous structures separated by the space containing the circulating cerebrospinal fluid, which is continuous with the ventricular system, surrounds the convexity and base of the brain and extends around the spinal cord. Consequently, an acute bacterial infection starting anywhere along this communicating system, may spread rapidly throughout its extent, but usually more extensively affects a given area, especially the base of the brain in the interpeduncular space, over the cerebral hemispheres or the free surfaces of the cerebellum and pons. The process usually becomes widespread, however, and allows an early diagnosis by lumbar puncture, which sometimes is the only means of determining the presence, but particularly the type, of the meningitis.

The prominent symptoms noted at the onset, in a number of cases of epidemic cerebrospinal type reviewed, were: headache in 50 per cent, often quite severe and continuing as long as ten days before onslaught of the disease; vomiting in 43 per cent—frequently of several days' duration; pains in the back of the neck, back, or extremities, or general soreness and aching, in 30 per cent; sore throat in an equal number; listlessness and general malaise and apathy in 20 per cent; chills in 14 per cent; and fever in 22 per cent. The illness began with delirium in 3 per cent, stupor in 6 per cent, and convulsions in one epileptic.

The neurological signs of pathology noted in these cases were: stiff neck in 87 per cent, bilateral Kernig in 50 per cent, and unilateral in 7 per cent, bilateral Babinski in 21 per cent, unilateral in 3 per cent, Brudzinski in 27 per cent, contralateral reflex in 7 per cent, opisthotonos in 21 per cent, retraction of the head in 10 per cent, and absence of pupillary reaction in 33 per cent. Ptosis of one eyelid was presented in 13 per cent; strabismus, nystagmus and corneal anesthesia were each noted in 7 per cent. The deep reflexes were generally increased early in the disease and later decreased. General rigidity was noted

in 7 per cent, while 3 per cent showed rigidity of the upper extremities, and 3 per cent on one side. Spasticity was evidenced in 17 per cent; 14 per cent evidenced pain on motion of the neck, the same number general twitching, and 7 per cent tremors of the tongue and hands. Photophobia was distressing in 7 per cent, urinary incontinence in an equal number, and general hyperesthesia was marked in 3 per cent. No neurological signs of pathology were elicited in 7 per cent—very fulminant cases.

Many of the signs enumerated occur in every case of meningitis, the differential diagnosis as to type often needing to be determined by the evidence found on examination of the spinal fluid. Clinically, tuberculous meningitis is always secondary to tuberculosis elsewhere and is more insidious in onset, usually showing prodromata for at least a number of days, and possibly several weeks, though the onset may be acute, with convulsion, agitated delirium and progressive coma. The disease usually lasts several weeks, with an almost invariably hopeless prognosis, those recovering from the condition diagnosed clinically as tuberculous meningitis likely being toxic meningitis, meningismus or mild meningeal signs sometimes seen in any infectious disease, only differentiated by the spinal puncture, and the presence or absence of the tubercle bacillus.

Purulent meningitis is meningeal infection with pyogenic micro-organisms, most commonly from otitis mastoiditis. Skull fracture may be followed immediately by acute meningitis and, rarely a traumatic scar may harbor infectious organisms which may result in a purulent meningitis after a long interval of health. Infections from the nose, sinuses, and throat, carbuncles of the head and neck, influenza, and whooping cough, and, more rarely, typhoid fever or pneumonia, may be complicated by purulent meningitis, the last being particularly virulent in this usually fatal disease.

Acute serous meningitis may occur as a complication of purulent otitis, or during the course of infectious diseases, closely simulating purulent meningitis. Rapid recession of symptoms usually follows spinal puncture, with recovery hastened by repetition of the procedure; but acute internal serous meningitis with obstruction and dilatation of the ventricles, may become chronic or remitting and be followed by internal hydrocephalus.

Acute spinal leptomeningitis is rarely a separate clinical entity, the inflammatory process usually quickly spreading generally over the extensive areas of the meninges. When it does occur, the course is generally fulminating, with death resulting in a few

days; but, if the process remains localized in the cord, recovery may occur, with usual residual paresis and radiating pains from spinal root involvement.

Chronic leptomeningitis, excluding syphilitic meninges infections, may rarely occur as an atypical protracted form of meningococcic or purulent meningitis, or in chronic alcoholism and lead poisoning, chronic cysticercus infection and senile dementia; but it is doubtful whether it can be recognized as an independent clinical entity without an exploration.

In acute meningitis, where diagnosis may be difficult, the cerebrospinal fluid examination may be differentially diagnostic.<sup>8</sup> The cell count in tuberculous In tuberculous meningitis the chloride content may drop to 400 to 600 mgm. per 100 cc. when it is diagnostic. In epidemic encephalitis there is an increase above the normal of 750 mgm. per 100 cc., and in diffuse meningitis a slight reduction of chlorides and absence of sugar.

Tuberculous meningitis shows a normal or slightly decreased, and epidemic encephalitis normal or slightly increased, sugar content above the normal average of 45 mgm. per 100 cc.

Cultures from the cerebrospinal fluid determine the type of meningitis, whether meningococcic, streptococcic, pneumonococcic or influenzal, staphy-

	Cerebro-Spinal Fluid in Differential Diagnoses						
DISEASE	CELL COUNT	PROTEIN CONTENT	CHLORIDE CONTENT	SUGAR CONTENT	WASSERMANN REACTION (Sp. Fl.)	COLLOIDAL GOLD REACTION	
Normal	3 - 8 (to 10)	None (.018%)	750 mgm. per 100 cc.	45 mgm. per 100 cc.	Negative		
Diffuse Purulent Meningitis	Hundreds to many thousands polymorpho- neuclear leukocytes	+ + + +	Slight reduction	Absent			
Tuberculous Meningitis	20 - 100 small lymphocytes	+ + + +	Decrease to 400 to 600 mgm. per 100 cc.	Normal or slight decrease			
Epidemic Encephalitis	Normal to 30 lymph- ocytes	Absent or slight amount	Slight increase	Normal or slight increase			
Cerebro- Spinal Syphilis	50 to 500	+ + +			95-100% positive 80-90% in blood	90% Zone I	
Paresis	30 to several hundred rarely	+ + + +			100% positive (Blood same)	90% Zone I	
Tabes	20 - 200	+ +			90% positive (Blood in 85%)	90% Zone II	

maningitis shows 20 to 100 small lymphocytes, while in diffuse purulent meningitis hundreds to many thousands of polymorphonuclear leukocytes may be present. In epidemic encephalitis the cell count is low—from normal to 30 lymphocytes, in cerebrospinal lues, 50 to 500, and in paresis 30 to several thousand. The protein content of the cerebrospinal fluid is four plus in diffuse meningitis and in the tuberculous type, absent or present in slight amount in epidemic encephalitis, 4 plus in paresis, and 3 plus in cerebrospinal syphilis.

lococcic meningitis being extremely rare. In tuberculous meningitis the tubercle bacillus may be found in the sputum or by guinea pig inoculation. Cultures from the spinal fluid of epidemic encephalitic patients are sterile.

The treatment of acute meningitis is unsatisfactory and often futile, being essentially symptomatic except in epidemic cerebrospinal type, where antimeningococcus serum should be administered early in large doses intraspinally, intravenously and also intramuscularly. In fulminant cases, where death may occur

cur before evidence of signs, and the meninges show little involvement in the short time of the infection, death appears to be due mainly to the septicemia, and the clinical impression is one of an overwhelming blood infection. A number of deaths from epidemic cercbrospinal meningitis have been reported without meningitis<sup>14</sup> evidently due to meningococcemia.

In the cases reviewed, above mentioned, where the type of infection was particularly fulminating, as much as 115 cc. of antimeningococcic serum was administered intraspinously, 818 intracisternally and 100 cc. intramuscularly to one patient, without recovery. One patient, ill 23 days, was treated by fourteen alternating cisternal and spinal punctures, on account of apparent poor results in serum-treated patients, with some improvement, followed by recrudescence. Patients have been reported, 15 where little improvement followed intraspinal and intravenous administration of serum, who responded to administration of 30 cc. daily for a week into the lateral ventricle following trephining. Goldman and Bower16 compared the results of treatment in fifty patients treated by the cisternal route and forty-eight by the lumbar, with a mortality rate of 25.5 per cent by the former method and 52.3 per cent by the latter. Evans and Welsh<sup>17</sup> used 5 cc. of antimeningococcic serum in each common carotid artery and 10 cc. in the cisterna magna with favorable results. They prefer the cisternal route to the lumbar, avoiding spinal block, and, adding some air with the injection, they believe the amount of arachnoiditis is much lessened. The intracarotid administration of Pregl's iodine and acriflavine has been used by Crawford,31 Kolmer,82 Dowman, et al, with some success. Reports indicate favorable results are directly proportional to the amount of serum used and the earliness of its use. More frequent spinal drainage is widely urged, some experience d writers advising drainage every six to eight hours until marked amelioration of the symptoms. Where the serum being used does not seem therapeutically effective, change to another manufacture is advised-titration and other laboratory tests of serum efficiency being reported as nondecisive of the clinical value of a particular serum. Large amounts of serum used earlier, more extensively and frequently, with more frequent brain dehydration and drainage, should show better results than present mortality statistics indicate. The incentive for more desirable results is ever present when one sees the residuals in patients recovering with deafness, blindness, mental abnormalities, and paralysis, and it is realized that the mortality rate

gives little conception of the seriousness of this in-

In the post-meningitic symptoms, routine repeated lumbar punctures are often effective, particularly in relieving the severe handicapping recurrent headaches that frequently remain as a residual for many years. In one patient who came to the writer's attention, 17 years after an extremely severe infection, with temporary blindness, deafness and hemiplegia, and ocular palsies, all were recovered from except the extremely severe, persistent headache every two to five weeks.

Recovery from pneumococcic meningitis, which is considered almost invariably fatal, is reported by Max Weinberg<sup>15</sup> following the use of potassium permanganate enemata, using four ounces of a solution of a pint and a half of water containing two grains (1:5760) of potassium permanganate.

Gonococcus meningitis is reported<sup>®</sup> in a patient following five weeks' illness, with no response to antimeningitic serum, rapidly improving to recovery after three weeks' administration of antogenous vaccine. Another case is reported, however, which improved rapidly with the administration of antimeningococcic serum given as non-specific therapy. Meningitis due to bacterium tularense is reported, and the importance of prevention is stressed, as no therapeutic measures are known.

#### ENCEPHALITIS

- 1. In the course of a brain disease, e. g., meningitis.
- As a variant, or in the course of acute anterior poliomyelitis.
- With acute infections—measles, scarlet, pneumonia, etc.—and post-vaccinal.
- 4. Acute alcoholic polioencephalitis.
- 5. Polioencephalitis chronica inferior (Wernicke).
- 6. Acute serous encephalitis.
- 7. Epidemic encephalitis.
- 8. Encephalitis disseminata.

Encephalitis is an acute non-purulent inflammation of the gray matter of the brain, shown by some mental symptoms, usually meningitic signs, often pupillary and ocular disturbances, frequently some disturbance of motility, but most characteristically marked by signs and symptoms of multiple foci and pathology in widely separated parts of the brain. Hence, only a tentative classification may be attempted, as suggested by Wechsler. (1) Encephalitis occurring in the course of any disease of the brain, as in the meningitides—syphilitic, tuberculous, men-

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ingococcic and purulent. Purulent encephalitis of any extent merges into brain abscess. (2) Poliomyelo-encephalitis in the course of, or a variant of acute anterior poliomyelitis. (3) Encephalitis in the course of infectious disease-measles, scarlet fever, whooping cough, diphtheria, pneumonia, malaria, influenza, and in intoxications, and post-vaccinal, also known as acute hemorrhagic encephalitis of Strumpell, and more frequently occurring in children. (4) Polio-encephalitis acuta hemorrhagica superior of Wernicke, or acute alcoholic polio-encephalitis. (5) Polioencephalitis chronica inferior (Wernicke)chronic bulbar paralysis associated with progressive muscular atrophy. (6) Acute serous encephalitisusually a severe, extremely acute, toxic state, with transudation of serum into the perivascular spaces instead of cells. (7) Epidemic encephalitis, to which may be added (8) Spiller's encephalitis disseminata10 characterized by progressive cranial nerve palsies. mono and hemipareses, sometimes bilateral.

Epidemic encephalitis, first described by Economo in 1917, following the great world-wide influenzal epidemic, has become pandemic, though somewhat milder (20 per cent mortality at first) possibly due to some mutation or alteration of the causative agent. or a developing immunity against the infection. Its most characteristic feature is, that of all acute diseases of the nervous system, it is the most widespread and disseminated, evidencing a diverse, varied and often puzzling symptomatology; but where an acute nervous symptom infection occurs without apparent cause, accompanied by some febrile reaction, possibly some signs of meningeal irritation, disturbances of consciousness, some radicular pains, abnormal involuntary movements, and ocular or pupillary disturbances, one is justified in diagnosing epidemic encephalitis.

With the diversity of symptoms, disseminated pathology is to be expected, and has been found, not only in the basal ganglia, particularly the substantia nigra and nucleus ruber, but also scattered through the cerebrum, in the thalamus, the cerebellum, and even in the medulla and pons.

The course of this disease varies as much as the diversity of its acute symptoms. The most distressing and handicapping symptoms—more tragic and incapacitating than the illness itself—may appear after a two to eight years' latent period, when the most common sequel appears in the form of the typical Parkinsonian syndrome, with progressive spasticity and rigidity of one side, followed by similar signs on the opposite side, postural disturbances,

impairment of associated movements (dyskinesia), frequently pupillary abnormalities, the typical facies, rythmic tremors, occasionally oculogyric crises, tachypnea, and impulsive actions, frequently irritability, forgetfulness, lack of concentration and power to work, and occasionally actual psychotic manifestaions20 with delusions and hallucinations, but particularly emotional episodes. In children sequelae are most frequently manifested in behavior and conduct disorders, marked emotionalism, impulsiveness, inability to integrate or concentrate well, and by decided personality changes, with cruelty and abnormal sexual tendencies, rather than the motor disturbances shown in adults. These disorders in children may be found to have closely followed an undiagnosed mildly febrile illness, with slowly progressive insidious symptoms, or without any observed prodromata having occurred.

Unfortunately, no effective treatment is available, but hyoscine hydrobromide 1/100 to 1/150 gr., two or three times a day, and tr. gelsemium, or tr. stramonium21, in ascending doses, from 10 to 60 minims three times a day, have favorable effect on the spasticity and tremors and increase the feeling of general well being, in the Parkinsonian syndrome. Typhoid vaccine intravenously, producing protein shock, sometimes has temporary beneficial results. Levaditi's vaccine and a vaccine prepared by Drs. Stewart and Evans,2 from cultures of a particular strain of Pfeiffer bacillus isolated and found in all post-encephalitic patients examined, have been used with reports of amelioration of signs in a number of patients. M. Lavai found relief to be instantaneous from intravenous injection of atropine in epidemic encephalitic hiccup-in most cases after a single injection, and only three of thirty-two proving refractory. Sudden relief has been recorded from painful injection of ether into the skin.

#### BRAIN ABSCESS

Pathology may result from (1) trauma by direct introduction, (2) middle-ear disease most commonly, and causative in one-half to one-third of the cases, (3) purulent infections elsewhere—e. g., bronchitis, empyema, pulmonary gangrene, (4) blood stream infection, rarely.

Abscess has been reported without bony vault injury following trauma, and after as long as 25 years' latent period.

Symptoms of brain abscess are those of an expanding space-taking inflammatory lesion—hence, both general and focal, but frequently masked by the underlying cause, as in mastoiditis or by the complicat-

ing meningitis, and may appear after a latent period of weeks or months, followed by a similar lengthy period of minor vague symptoms of headache, malaise, anorexia, apathy, and irritability which may be interpreted as neurotic. Tumor usually runs a slower course, is more likely to cause choked disk, and has not the history of preceding trauma or infection. Sinus thrombosis is characterized by high remitting fever, chills, positive blood culture, and, at times, a positive Queckenstedt test, but may coexist with abscess.

Circumscribed serous meningitis may simulate abscess, but usually disappears following lumbar puncture. The more acute and general signs and rapid course in meningitis, with examination of the cerebrospinal fluid, are usually differential. Vertigo and nystagmus are the rule in labyrinthitis, deafness is present, and usually with lack of response in the caloric tests, these offer diagnostic criteria. Diagnosis is often difficult, but when reasonably certain, exploration is justified. Ventriculography is contraindicated because of danger of rupture of a pus pocket.

#### INJURIES OF THE BRAIN

Varying symptoms result from skull trauma depending upon the force, direction, location, and nature, of the injury, with its ensuing damage to the cranial contents. Simple concussion may result without fracture in a physiochemical molecular alteration of the brain structures. Numerous minute hemorrhages, or even foci of softening, may occur. With a compound fracture there is grave danger of infection, with subsequent pyogenic meningitis, encephalitis, arachnitis, serous meningitis, epidural or deepseated abscess—symptoms of the latter probably not occurring for weeks or months. Roentgenogram of the skull should never be omitted, for medico-legal reasons if no other. Epidural hemorrhage frequently gives a characteristic syndrome of a varying brief period of unconsciousness, followed by absence of symptoms for several hours or a day or more, with ensuing progressive somnolence, stupor and coma. focal tics and convulsions and hemiplegia.

In subdural hemorrhage the interval between the date of injury and onset of symptoms may be several weeks, when the effusion is found to be serous or serosanguineous. Where the hemorrhage is subarachnoid, the cerebrospinal fluid will be found bloody, and lumbar puncture should be repeated in the attempt to reduce cerebral edema—the effect of cerebral damage from pressure of the blood clot—and lessen the usual restlessness, delirium, and danger of

cardiac and respiratory failure from paralysis of their centers in the bulb. Hypodermic magnesium sulphate 30 per cent or, better 50 per cent glucose solution, intravenously preferably, or rectally, also assists in reducing the cerebrospinal fluid pressure.

Kennedy<sup>21</sup> warns against too definite opinions in post-traumatic cranial symptoms and stresses the need for "harmony between the degree of injury, the subsequent history of the patient's symptoms and his physical condition; dissonance in this trilogy must be viewed askant and awake a suspicion of a suggested neurosis." He advises encephalography to assist in more ably determining the degree of brain injury and to estimate the organic disability in a particular case. He gives as criteria of brain injury sufficient to produce organic change in the brain:

- A. Absolute Criteria,
  - 1. Roentgen evidence-skull fracture
  - 2. Bloody spinal fluid
  - 3. Bleeding from the orifices, especially from the ears
  - 4. Focal cerebral palsies.
- B. Presumptive criteria in the order of their importance:
  - Convulsive states proved to be posttraumatic
  - 6. Ventricular distortion proved to be posttraumatic
  - 7. History of prolonged unconsciousness
  - 8. History of adequate trauma, with especial consideration of the occurrence of vomiting following the injury.

Wilder Penfield suggests the use of oxygen rather than air, with much less ensuing post-injection headache.

#### BRAIN TUMOR

Tumor will but be mentioned for serious consideration where there is slowly progressively severe headache, at times recurrent cephalalgia without other obvious cause, occasional vomiting without nausea often projectile in type, often mental dullness, personality changes and dizziness, followed usually by focal symptoms of tics, Jacksonian attacks, convulsions, auditory and equilibratory symptoms, tremors, progressive paresis, visual and ocular signs and symptoms, and incoordination and hypotonia, particularly in the presence of choked disk.

Meningioma may be extremely slow in growth, with progression of signs and symptoms over a number of years, due to accommodation of the cranial contents to a slow-growing space-taking lesion, but spongioblastoma multiforme may be extremely rapid

in growth, with rapid and sudden onset of symptoms, as illustrated in a report<sup>25</sup> and review, by the writer, of seventy cases of this type where the average duration of illness from the first symptom—which in many was sudden, startling and severe in onset—was but 49 days.

Roentgen-ray of the skull offers but little help in diagnosis or localization; but ventriculography, <sup>27 28</sup> introduction of air into the ventricles after withdrawal of fluid, may reveal by roentgenogram their distortion, size, and shape, or encephalography <sup>26</sup> withdrawal of spinal fluid and injection of air at the lumbar spine, may assist in localization of the lesion.

Early diagnosis and surgical treatment is of prime importance to avoid progressive brain destruction, with permanent paralysis, blindness, or other focal incapacity, especially when untreated brain tumor is inevitably fatal. Frazier states that there are about four thousand patients with brain tumor in the United States, of which four hundred come to operation annually, and that diagnosis and treatment are improving.

#### SYPHILIS OF THE BRAIN

The pathological characeristic of neurosyphilis is its widespread dissemination in every portion of the cerebrospinal system, the parenchyma of the brain and cord, the nerves, meninges, and blood vessels, possibly invading a certain element and giving rise to a special clinical syndrome, but nevertheless evidencing some varying involvement in all other elements. This diffuse invasion limits definite classification, but the main focus or region involved allows grouping of neurosyphilis into vascular, meningeal, meningovascular and parenchymatous types. Clinical differentiation is often difficult, but distinction is necessary, both for treatment and prognosis, for paresis responds poorly to treatment and has a very poor outlook, in contrast to the much more hopeful prognosis in diffuse cerebral syphilis.

With the usual disseminated pathology present in syphilitic infection of the nervous system, the signs and symptoms vary greatly, but differ in no way from those caused by other cerebral lesions. Early in the disease, the vague, varying, fleeting, indefinite symptoms may simulate a neurosis, but with definite mental symptoms, evidence of motor symptom involvement, disturbed reflexes, paresthesias, ocular palsies, sensory changes or root pains, the diagnosis is usually indicated before laboratory reports are obtained.

The base of the brain is usually most involved,

with resultant cranial nerve palsies, and, as the interpeduncular space is the favorite site of the attack, the optic and ocular nerves, particularly the oculomotor, frequently first evidence cerebral syphilitic disease. Unequal, irregular pupils responding poorly to light, very rarely may be present in chronic alcoholism or encephalitis, but are almost invariably diagnostic of neurosyphilis. Paralytic symptoms occur in cerebral softening from thrombosis or hemorrhage where the vessels are principally involved, and usually at a much earlier age than most cerebral vascular accidents. Examination of the cerebrospinal fluid is usually very helpful in differentiating the type of syphilitic involvement and paresis, due to the frequent resemblance of meningovascular syphilis, should never be diagnosed without a positive Wassermann reaction in both the blood and spinal fluid. In cerebrospinal syphilis the blood Wassermann reaction is positive in 80 to 90 per cent, and in the spinal fluid, 95 to 100 per cent positive. The colloidal gold reaction is diagnostic in 90 per cent or more of spinal fluids from patients with paresis or cerebrospinal syphilis. Paresis usually gives a slightly lower spinalfluid cell count than in the cerebrospinal type, being thirty to several hundred rarely in the former and 50 to 500 in the latter.

Tryparsamide, used with the soluble bismuth preparations preferably, mercury rubs or injections, and the iodides, give the best results in neurosyphilis, but an uninvolved optic system should be present and two competent fundal examinations should be made the first month of its use, when, no toxic symptoms having shown in the eye, it should be quite safe to use indefinitely insofar as danger to vision is concerned. It should be given intravenously in 2 or 3 gm. doses every five to seven days, in a course of 50 doses, and the course should be repeated if the indications remain.

Paresis has shown definite response to fever therapy induced electrically, or by malarial infection, with 8 (to 14) chills, during which time arsenicals, except tryparsamide, need to be omitted. Courses of hot baths have apparently produced remissions, and protein therapy in the form of intravenous injections of typhoid vaccine in increasing doses of .2 to 2 cc. diluted with saline solution, produce temporary amelioration of excitement, agitation, restlessness, insomnia, and mental confusion and clouding. Gummata not yielding to usual antiluetic treatment for a reasonable time, should be treated surgically, as other brain tumors, particularly if they appear dangerous to life, or are causing incapacity or focal epilepsy.

## DISORDERS OF MOTILITY AND DISEASES OF THE BASAL GANGLIA

- 1. Paralysis agitans (Parkinson's disease)
- 2. Progressive lenticular degeneration (Wilson's disease)
- 3. Pseudosclerosis of Westphal
- 4. Dystonia musculorum deformans
- 5. Huntington's chorea
- 6. Sydenham's chorea
- 7. Various athetoses, myoclonias, tremors and tics.

Disorders of motility are attributable to disease of the basal ganglia, mainly due to inflammatory lesions followed by degenerative changes. The manifestations and sequelae of chronic epidemic encephalitis may simulate practically all basal ganglia syndromes. Syphilis, tubercles, and vascular lesions of the basal ganglia, may be causative of abnormal motility, while manganese poisoning may give a syndrome characterized by coarse tremor, masked facies, bulbar speech and compulsive laughter, and carbon monoxide poisoning may be followed by the Parkinsonian syndrome from the softening caused in the lenticular muscles.

Disease of the striatum, as described by Wechsler,2 is characterized by (1) rigidity, generally increased muscle tonus, (2) tremors and similar involuntary movements, (3) hypokinesia, decreased voluntary, especially spontaneous movements, (4) impairment of associated movements, (5) absence of "true" paralysis from involvement of the pyramidal tracts, (6) absence of sensory disturbances. Other signs are anomalies of posture, the body being held in flexion, and the commonly associated hyperkinetic syndromes -the choreas, athetoses, and dystonias. Definite localization of the lesions causing the various abnormal movements, is extremely difficult, due to the striate complex associations29 of various parts of the striate body, including the caudate and lenticular nucleithe putamen and globus pallidus, with the body of Luys, the substantia nigra and the red nucleus-between each other and with other parts of the brainthe cerebrum, cerebellum, the thalamus, the pons.

The more common syndromes included in basal ganglia disease are paralysis agitans (Parkinson's disease), progressive lenticular degeneration (Wilson's disease), pseudosclerosis of Westphal, dystonia musculorum deformans, various athetoses, Huntington's chorea, Sydenham's chorea, and a number of complicated involuntary movements, myoclonias, tremors and tics.

The syndrome of paralysis agitans is generally rarely recognized, especially since the more common occurrence of the Parkinsonian syndrome developing

in chronic epidemic encephalitis. Pathologically, the classical type involves the globus pallidus and ansa lenticularis, mainly, while the post encephalitic involvement is more widespread and disseminated, particularly predominating in the midbrain, mainly in the substantia nigra and nucleus ruber, but also showing lesions in the cerebrum and also in some brains in the thalamus, cerebellum, and even in the pons. Also, the lesion in the latter is a chronic inflammatory change, originally, possibly followed by degenerative processes.

Clinical differentiation of the two types, even in older patients in whom only paralysis agitans is usually found, is made by experienced neurologists, but it is probably of little more than academic value. With the absence of history, symptoms and signs are usually more diverse in the post encephalitic variety, with some not formerly associated with the disease. Pupillary anomalies, ocular palsies, and, particularly. impairment of convergence from involvement of the third nerve nucleus, emotional instability likely from lesions in the thalamus, radicular pains, with loss of automatic and associated movements, are more prevalent in chronic epidemic encephalitis. Paralysis of upward gaze, respiratory anomalies, impulsive actions -particularly, sudden, forced, involuntary running, even with injuries from striking objects-bizarre movements and actions and personality changes, at times with psychotic manifestations, are symptoms frequently seen in the postencephalitic patient, not observed in the classical syndrome.

Progressive lenticular degeneration (Wilson's disease) is a chronic, progressive, fatal disease, usually familial, but neither congenital nor hereditary, resulting from bilateral symmetrical degeneration of the putamen of the lenticular nucleus, mainly occurring between the ages of 10 and 20. In this disease the liver is shrunken, shows multilobular cirrhosis and, later, a typical hobnailed appearance. Clinically, tremor, rigidity, contractures, mental deterioration to dementia, dysphagia, dysarthria, hepatic cirrhosis, progressive emaciation and the absence of evidence of involvement of the pyramidal tract, the sensory system or cranial nerves, characterize this hopeless syndrome.

Pseudosclerosis of Westphal resembles Wilson's disease and begins at about the same age, but the pathological process is more diffuse and less definite. Tremor and rigidity are characteristic, emotional disturbances are usual, with mental changes less severe than in progressive lenticular degeneration, ataxia occurs and occasionally optic atrophy, but the presence of a pigmented greenish ring one to two milli-

meters wide at the outer edge of the cornea (Fleischer and Strumpell's sign) is considered to be typical and pathognomonic.

Dystonia musculorum deformans consists in a slow, spontaneous, involuntary movement, following a definite pactern without purposeful end, shown by slow, twisting, turning torsion and irregular writhing and wriggling of the limbs and body. The symptom begins between 8 and 15, is usually very slowly progressive, beginning with a slow twisting, turning or tlinging of the leg, apparently purposeless arm movements or torticollis, which may be considered hysterical, till the movements become widespread, involving the muscles of the back, neck, feet, and all of the leg muscles.

Double athetosis is a congenital affection, characterized by widespread mass movements of practically all muscles, particularly of the hands, feet and face. Speech disturbances are marked, and mentality is impaired.

Chronic degenerative hereditary chorea (Huntington's chorea). This disease is a hereditary, familial chronic, progressive chorea with mental deterioration terminating in dementia, usually beginning past 40. Most of the brain evidences miliary encephalitic foci with secondary atrophy and cell degeneration most marked in the cerebral cortex and basal ganglia. The choreic movements may first appear in the face or upper extremities, then become gradually more violent and widespread, with much facial grimacing and bizarre dancing and jerky gait, gesticulations and marked dysarthria, smacking lip and tongue movements, breathing anomalies and the steadily progressive mental deterioration. Cases have been reported without the mental deterioration, and others without the family history, but family history may be difficult to elicit, or be unknown to the patient or informants.

Chorea (Sydenham's chorea, St. Vitus dance). Sydenham's chorea is probably always infectious in origin and definitely related to the infections in tonsillitis, arthritis and endocarditis, usually occurring in the young, from 5 to 15 years of age, but not rarely as late as 25. Usually the disease begins insidiously, with restless, fidgety hyperactivity followed by the involuntary, spontaneous, jerky, irregular, purposeless movements, usually beginning in one limb, either upper or lower. The speech becomes jerky and explosive, and may become quite dysarthritic. Psychic symptoms, varying from restlessness and irritability to violent mania with hallucinations, may occur, as in other toxic-infectious psychoses. Very

mild types may occur without the choreiform movements, the diagnosis heing made from the history or presence of a tonsillitis, possibly with signs of an arthritic or cardiac infection, restlessness, general nervous instability and emotionalism, and the decreased deep reflexes. On the other hand, the illness may be very acute and terminate fatally in two or three weeks. Chorea gravidarum is especially serious, with a mortality given as high as 25 per cent. Treatment should be similar to that of endocarditis and arthritis without the cerebrospinal symptoms. Small's cardio-arthritides serum and antigen are very helpful in many cases. Sedatives, particularly by hydrotherapeutic means, rest, and supportive measures, are indicated. The prognosis is usually good, without residuals, but recurrences are common and the condition may become chronically intermittent. Usually, the older the patient, the more severe and prolonged the illness.

THE CEREBELLAR SYNDROME

1. Congenital—Cerebellar Agenesis

Childhood Cerebellar Palsies

- 2. Acquired-
  - (a) Acute Cerebellar Ataxia Traumatic Inflammatory
  - (b) Hemorrhagic
  - (c) Toxic-degenerative

#### 3. Tumors

Synergia, or coordination, according to Mills and Weisenburg, is the fundamental cerebellar function and dyssynergia, or ataxia and failure of proper coordinated movement, the fundamental symptom of cerebellar disease.

Disease of the cerebellum may be (1) congenital, as seen in cerebellar agenesis or hypoplasia and child-hood cerebellar palsies, or (2) acquired as an (a) acute cerebellar ataxia, which may be traumatic or inflammatory, as in abscess formation or an encephalitic infection, (b) hemorrhagic, and (c) toxic degenerative, chronic toxic or arteriosclerotic with atrophy. Cerebellar tumors may give confusing signs from neighborhood involvement and pressure of the expanding lesion. In unilateral lesions, signs are usually seen on the homolateral side of the body, due to recrossing of the rubrospinal tract after efferent cerebellar fibers crossing to the opposite nucleus ruber.

The typical cerebellar syndrome manifests ataxia, dyssynergia, and decomposition of all active movements. The patient is broad based, swaying in any direction, and requires support for maintenance of the erect position. Gait is staggering and reeling,

with arms outstretched to reach support to avoid falling. Ataxia of the shoulder and pelvic girdles is present, with defective integrative synergy of the trunk and extremities. Incoordination is shown in all movements, dysmetria is shown in faulty measurement of rate, amplitude and force of a movement, and the patient is unable to execute alternating and successive movements rapidly and smoothly (adiadokocinesis). The knee jerk is frequently pencular. Nystagmus is common, ocular movements are irregular, jerky and oscillatory, with increased activity of the eyeballs, and speech is jerky, explosive, scanning. Hypotonia is usual, but no true paralysis is present, and the reflexes are unaffected.

#### SUMMARY

Practical diagnostic points in diseases of the brain have been presented.

- 1. A classification of cerebral circulatory disturbances has been offered, with some differential diagnostic aids, particularly as to type and location of acute vascular lesions.
- 2. The various types of meningitis have been discussed and the prominent symptoms at onset and most common neurological signs in their order of frequency in a number of cases of the epidemic type, reported. A comparative differential chart of spinal-tluid findings in the various types has been included and the methods of administration and reported results of different types of treatment, reviewed. Frequent brain dehydration and drainage and the early use of large amounts of serum early in the epidemic type, has been emphasized.
- 3. A tentative classification of encephalitis has been given and attention has been called to the diversity of symptoms in the chronic epidemic type and to its usual syndrome in children.
- 4. A few differential points in diagnoses of brain abscess, tumor, and the various types of traumatic cerebral hemorrhage, have been mentioned, and Kennedy's criteria of brain trauma given.
- 5. Diagnostic aid is offered in syphilis of the brain, by examination reports of the cerebrospinal fluid, and more liberal use of tryparsamide and fever therapy has been advised.
- 6. Disorders of motility are due to basal ganglia disturbances and the usual resulting syndromes from their impairment and the cerebellar syndrome, have been briefly described.

#### REFERENCES AND SOURCES

- 1. Oppenheim: Text Book of Nervous Diseases, T. N. Foulis, London, 1911.
- 2. Wechsler, I: Text Book of Clinical Neurology, W. B. Saunders Company, Phila., 1927.

- 3. Purvis and Stewart: Diagnosis of Nervous Disease, E. B. Treat Co., New York, 1927.
- 4. Neustadder, M.: Clinical Neurology, F. A. Davis Co., Phila., 1929.
- 5. Tilney and Riley: Form and Functions of the Central Nervous System, Paul B. Hoeber Company, New York, 1927.
- 6. Ranson, S. W.: Anatomy of the Nervous System, W. B. Saunders Company, Phila., 1928.
- 7. Bing, R.: Compendium of Regional Diagnosis in Affections of the Brain and Spinal Cord. C. V. Mosby Company, St. Louis, 1928.
- 8. Kolmer, John: Practices and Principles of Chemotherapy, W. B. Saunders Company, Phila., 1927.
- 9. Practical Medicine Series, Neurology and Psychiatry, 1931, Year Book Publishers, Chicago.
- 10. Winkleman, N. W.; and Echel, John L.: Extensive brain hemorrhage, J. Nerv. & Ment. Dis., 61, 6, June, 1925.
- 11. Krabbe, Knud; and Jorgenson, E. Greet: Spinal fluid in cerebral hemorrhage and thrombosis, (Acta psychiat et neurol., 6, 1931) Practical Medicing Series, Neur. & Psych., 1931.
- 12. Kennedy, Foster; and Wortis, S. B.: Modern treatment of intracranial pressure, J. A. M. A. 96: 1928, April 18, 1931.
- 13. Denker, Peter G.: Effect of caffeine on cerebrospinal fluid pressure. Am. J. Med. Sc. 1811: 675-681, May, 1931.
- 14. Baehr, G.; and Klemper, P.: Fulminating bacteremias with conspicuous purpuric rash without meningitis, International Clinics 1: 175, March, 1929.
- 15. Klemmers, R. N.: Meningococcic case treated by lumbar, cisternal and ventricular routes, Atlantic M. J. 31; 242, January, 1928.
- 16. Goldman, Theodore; and Bower, Albert: Cisternal and lumbar routes in treatment of epidemic meningitis, Am. J. M. Sc., March, 1931.
- 17. Evans, James A.; and Welsh, Sylvester N.: Intracarotid serum therapy, Ann. Int. Med., April, 1931.
- 18. Weinberg, Max: Pneumococcic (type III) meningitis treated with potassium permanganate, with recovery, J. Nerv. & Ment. Dis. 74:38-45, July, 1931.
- 19. Spiller, W. W.: Encephalitis disseminata. Arch. Neurol. & Psychiat. 22: 647-671, Oct., 1929.
- 20. Alpers, B. J.: Postencephalitic Parkinsonism with psychosis, J. Nerv. & Ment. Dis. 72:257-265, September, 1930.
- 21. Hoedemaker, E. D.; and Burns, M. A.: Effect of stramonium in Parkinsonism. J. A. M. A. 95: 91-94, July 12, 1930.
- 22. Steen, Patricia: Stramonium treatment in chronic epidemic encephalitis, New York State J. Med., Sept. 1, 1931.
- 23. Stewart, W. B.; and Evans, M. J.: Bacteriological studies and treatment of chronic epidemic encephalitis, Am. J. Med. Sc. 180: 256-265, August, 1930.

24. Kennedy, Foster, et al.: Head Injuries, Arch. Neur. & Psychiat. 27, 4: 766-816, April, 1932.

25. Irish, C. W.: Tumor of the brain with sudden onset of symptoms, Arch. Neur. & Psychiat. 23: 727-741, April, 1930.

26. Frazier, C. H.; and Gardner, W. J.: Encephalography, Interstate Postgraduate Medical Assembly Proceedings, Detroit, 1929.

27. Gardner, W. J.; and Frazier, C. H.: Ventriculography. J. A. M. A 93: 193-4, July 20, 1929.

28. Grant, F. C.: Ventriculography. Am. J. Roentgenol. 18:264-9, September, 1927.

29. L'Hermitte, J.: The anatomic and clinical syndromes of the corpus striatum. Translated by J. H. Huddleson & W. M. Krans, Neurol. Bul. 3: 163-182, May, 1921.

30. Mills, C. K.; and Weisenburg, T. H.: Cerebellar symptoms and localization. J. A. M. A. 63, 1914.

31. Crawford, Albert S.: The Intracarotid treatment of meningitis. J. A. M. A., 98:18, 1531-5, April, 30, 1932.

32. Kolmer, John A.; et al.: Chemotherapy and serum therapy of pneumococcus and streptococcus meningitis, Tr. Am. Laryng., Rhyn. & Otol Soc., 35:270-291, 1929.

#### DISCUSSION

DR. A. B. STEWART (Las Vegas, N. M.): Dr. Irish, in addressing this Society, the members of which he has not heretofore met, has (if I may use a bridge term) left no point vulnerable for discussion. His paper covers such a vast field that it is very difficult even to attempt a discussion. There are only one or two points which might be stressed a little more, and one is spinal drainage. To the general man, spinal puncture is no longer a procedure that clarifies him in any particular, and it is the one thing which is going to aid the individual most in a great many diseases of the brain. Dr. Irish spoke about tryparsamide given intravenously in neurosyphilis, but it all depends upon the condition of the patient whether it should be used first or last or in conjunction with fever therapy. The doctor gave a beautiful resume of diagnostic criteria of all diseases of the brain and has left himself open to absolutely no criticism. If he had shown us a few cases, we might have been able to do so, but, as it is, his paper is so complete he has given us no chance. His classifications are very good. The paper should be read more than once in order fully to grasp the magnitude and thoroughness with which he has covered the field.

DR. A. H. VOGT (Albuquerque, N. M.): I am glad to have had the opportunity to listen to Dr. Irish's excellent and exhaustive paper. He did not leave himself open to attack and there is not much to say in discussion. The treatment of neurosyphilis falls very much into three groups. One third, more or less, will be benefited by the use of malaria therapy; the second group, by the use of triparsamide of bismuth; and the third group, by the old-

fashioned spinal puncture, which now seems to have gone out of use. We should consider seriously the economic loss caused by this disease, and that brings up the question of complete treatment of syphilis. In a recent issue of the Journal of American Cutaneous Review, there appeared an article by a foreigner, who asked if treatment prevents syphilis, or aggravates it. For the protection of society we must treat syphilis and urge treatment in an endeavor to prevent neuro-syphlis.

DR. F. C. VICKERS (Deming, N. M.): I should like to ask Dr. Irish's opinion of electric thermotherapy.

DR. IRISH (closing): It is generally conceded by many men whose opinions are much worth while, that electric thermotherapy has not yet become as acceptable as other forms of thermotherapy, or fever therapy. Hot baths give some temporary relief in quieting patients and relieving and limiting agitation, restlessness and insomnia. I am very appreciative of the discussion, and of the way my presentation was accepted. This subject has been rather a large bite to take, but I thought it might possibly interest some of you enough to stimulate neurological reading. Most men do not read neurological problems often, but it is one of the most interesting subjects we have in medicine.

#### PLASTIC SURGERY

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(Presented before the New Mexico Medical Society, at its Fiftieth Annual Meeting, at Santa Fe, N. M., May 19-21, 1932.)

The subject of plastic surgery is so broad that only certain phases of it can be discussed. Today, I am discussing that phase which has to do with the transplantation and shifting of skin. This phase of plastic surgery constitutes its most important branch—in fact, in nearly all instances, one must shift skin or transplant it in some manner.

Some of the oldest operations known to the history of man have been of a plastic nature. The reconstruction of the amputated nose dates way back in history. In ancient India, the tile-makers caste reconstructed noses by bringing a flap down from the forehead and, from this procedure, we have the Indian method of flap transplantation. Many years later, namely in 1597, Gasper Tagliocozzi, an Italian, described a method of rhinoplasty by taking the skin from the arm, and from this we have the Italian method of pedicle graft, namely, skin taken from a distance.

In the early twelfth century in France, we have the first authentic record of free skingrafting. At that time, a woman charlatan in the streets of Paris was attemp ing to sell a salve. Unable to do it, she took a knife, cut a piece of skin out of her leg, put it back on the leg and pasted it over with salve. Several days later, she showed the populace that the graft grew, and she sold a great deal of her salve, consequently.

With the continuation of wars and the increase of industry, plastic surgery has come more and more into its own. Nowadays, the automobile and industry are playing a greater part in the production of disfiguring injuries than even war.

When we pick up the text books, we notice that they talk of "autografting," or grafting from the same host; of "homografting," or grafting from another individual of like species; of "heterografting," or grafting from entirely different type of host.

Heterografting, that is, from unlike species—such as the grafting of frog skin and pig skin on humans —is impossible, unsurgical, and untrue. In all the literature of all the world, there has never been a successful case recorded that can be substantiated by the microscope. It merely acts as a covering under which the skin grows, either from the side or from islands which have remained in the denuded area. Likewise, it has been quite definitely established that one cannot grow skin from like species, even though the blood group is alike. This is true even though we use the skin from parent to child or child to parent. Lexor, Blair, McWilliams, Holden, and innumerable workers, have quite definitely proved that such grafts never reproduce a living cell and that the graft wholly disappears in a very short time. Those few cells which remain are highly questionable. If one were to pigment such a skin and transplant it, one would find that, in every instance, within two to four weeks, even though there is no infection, this whole graft would melt away like thin ice. Consequently, there is only one place to take skin, that is, from the same individual, and all other methods must be discarded.

I have mentioned this so emphatically because every once in a while one picks up a newspaper and reads that there has been a request made by a local surgeon for people to give their skin for burned children. This only subjects many people to unnecessary pain, the liability of infection, and a great deal of unnecessary trouble; and, in the certain disaster to the graft, we only decry good surgery.

There are two great divisions of skin transplantation: (1) true grafting, in which the skin is entirely separated from its bed and transplanted to a distant place; (2) where skin is shifted without entirely cutting it loose.

When using absolutely free grafts, we use four methods: (1) Fine pin-point-type grafts are occasionally used in badly infected, granulating areas. (2) We use very thin tissue-paper-like grafts, which are known as Thiersch grafts. (3) We use an intermediate type of graft which has been called a split graft. (4) We use a heavier type of graft; namely, the full-thickness graft.

The second graft, the very thin graft, is only used because it readily grows, since the area underneath it is almost certain to contract badly, causing the graft to crinkle.

The third method, the split graft, is the type of graft we most often use. With a suction machine,

we are able to cut this graft in almost any desired thickness. Under ideal conditions, we can cut a graft as large as six by sixteen inches without trauma. It is easy to cut a graft six inches by ten inches. In order that these grafts may take, the grafted surface must be clean and free from infection, must be either freshly denuded or have a clean even granulating surface. The graft must be sewed in place and even, smooth pressure maintained for at least five days. We usually leave the dressing a week without changing it.

For the full thickness graft, one can, of course, cut it any size desired. It is seldom safe to cut this graft larger than six by eight inches. This graft is particularly adapted to the grafting of the palms and the fingers of burned children following contractures, and to replace certain contractures around the cyes and on the forehead. It is very good to cover clbow-joints, knee-caps, or any other area, such as in the popliteal spaces or axilla, in which we wish to have a rather large area of soft skin. The area to be grafted must be absolutely clean, must be smooth and regular; the graft should be sewed in place with just a slight amount of tension. It must be firmly and smoothly held in place and not disturbed for at least a week, and uniform pressure must be maintained for fully two weeks.

The second great group is the shifting of skin without completely severing it, that is, with the maintainance of blood supply from a pedicle. When we wish merely to close over an area by sliding sidewise, where the base of the flap is equal to or greater than the length, it is usually safe, if the blood supply is good, to shift this skin at one operation. Whenever there is a doubt, or whenever the length of the graft is three or four times the width of the base, one should always lift the graft and replace it in its original bed, allowing it to remain there about three weeks before attempting to shift it.

There are so many phases and so many different combinations of skingrafting, that I am only touching on some basic principles. In the first place, whenever possible, the flap should contain a major artery with an unimpaired venous return. Second, the field should be absolutely clean and free of infection. Third, before cutting the pedicle, the vitality of the graft should be tested by compression of the pedicle or gradually cutting it. It is seldom safe to cut the pedicle under two weeks and is seldom necessary to leave it longer than three weeks. Conditions, of course, must guide one. One must be careful, likewise, not to cut the flap too thin or to remove too much fat, as we know the small vessels that supply the skin run in the superficial fascia, namely, between the true skin and the fat.

When a very long graft is desired, one allows it to be attached on both ends and brings the graft together, making a tube. In that way, we prevent infection of the graft and then switch a very long flap. Likewise, if one wishes to get, for instance, a large smooth area in the neck and has no skin close by from which to take it, he can transplant a flap from the abdomen onto the arm, and then switch it

from the arm to the neck. This is called "jumping." In conclusion, there is no sure way to success, but if the fundamental rules are followed, skin transplantation today is highly practical. With the exception of the transplantation of very large full-thickness grafts on uneven surfaces, we today can almost promise success. Our failures are very few and far between and, even with a transplant of a rather large area of full-thickness free graft, we seldom lose all the graft and are quite successful in the majority of cases.

#### DISCUSSION

DR. L. E. GRISWOLD, (Oklahoma City):—I just want to say a word in behalf of Dr. von Wedel's work. I have been working with him for the period of a year and, while I cannot contribute anything to plastic surgery, we are very proud of the doctor's success in Oklahoma City. He has twenty or thirty of these plastic cases on which he is working all the time, and the results are always excellent.

DR. W. H. WOOLSTON, (Albuquerque): This is a most interesting subject, both to the surgeon and to the laity, and Dr. von Wedel is to be congratulated on his excellent results. This is very tedious work; the after-treatment requires a great deal of care and patience. Dr. von Wedel has given us a very interesting and instructive paper, for which we are grateful.

## FACIAL PAINS — DIFFERENTIAL DIAGNOSIS AND TREATMENT

## MARK ALBERT GLASER, M. D. Los Angeles, California

Since the studies of Sir Charles Bell (1829), to whom we are indebted for the knowledge that many of the facial neuralgias are due to disorders of the fifth nerve rather than the seventh nerve, great progress has been made. The neuralgias of the face are many and varied. Some are amenable to surgery; some yield to medical therapy; and to others, at present, we can afford no relief. One cannot too greatly deplore the many useless surgical procedures carried out for the relief of facial pain, such as the extraction of teeth, operations upon the nasal sinuses, intracranial section of the fifth cranial, sympathectomics, mastoid, sinus and even abdominal operations.

#### TIC DOULOUREUX.

Tic doulourcux—also called trigeminal neuralgia, chronic paroxysmal neuralgia, epileptiform neuralgia, major neuralgia and Fothergills' disease—was known to carly civilization. Trigeminal neuralgia was recognized by Avicenna in A. D. 1000, and was later described by Schlichtung (1748), Nicolous



Fig. 1. A composite sketch illustrating the position of needles for alcohol injection. (A) Extraoral maxillary nerve injection (Levy and Baudouin). (B) Extra-oral maxillary nerve injection, (Schloesser). (C) Extra-oral mandibular nerve injection (Levy and Baudouin).

Andre (1756), who first named it "tic douloureux," and Fothergill (1773), who accurately described the disease.

The pain of tic douloureux is probably one of the most severe known to medicine. The pain occurs about equally in men and women, and the right side is more frequently involved than the left. The average age of onset is approximately fifty years, although cases have been reported at twelve years for the youngest and eighty-seven for the oldest. It is confined mainly to the second and third divisions, rarely to the first.

The first onset of pain is usually sudden and violent. The pain may then leave and the patient be pain-free for months, or even years. After the disease has once established itself, however, the patient has acute paroxysms of sharp, laneinating, knife-like pains, occurring in attacks of a few seconds, with intervals of freedom. The period of repeated attacks may last from several days to several weeks, and then a remission of months to years may occur. As the time from the original attack increases, the intervals of freedom are lessened, and the morale of the patient is decreased so that he is in constant fear of an impending attack.

The attacks are brought on by contact, and even the draught of air. Occasionally, the only relief from pain is by going to bed in a dark room and entirely abstaining from food. Trigger zones, or certain sensitive areas in the face upon which any slight pressure brings on an attack, are characteristic of the disease.

The pain of trigeminal neuralgia is always confined to the sensory distribution of the fifth nerve, never going beyond its bounds. The pain is superficial and there is an absolute freedom from pain between these attacks, although occasionally there is a discomfort present in this interval. It is a unilateral disease, primarily, though there have been reported in the literature some fifty-four patients with bilateral pain. Trigeminal neuralgia is a disease of unknown etiology and no single case has ever been cured by the clearing up of oral sepsis, the extraction of carious teeth, the treatment of apical abscesses, or sinus operations. In addition, no single case has ever had a permanent relief of pain without therapy.

Treatment: Trichlorethylene is of value for the relief of pain in approximately 11 per cent of the case. This drug was discovered by chance in Germany during the World War. The dosage of this drug is as follows: inhalation three to four times a day, from 20 to 25 drops being placed on a piece of gauze. The inhalation should be continued until the odor has entirely disappeared. This should be carried out over a period of a month to six weeks before its use is discontinued. The drug occasionally produces vertigo, sleep, and drowsiness, and therefore it is well to take the inhalation in a recumbent position. After the pain is relieved, it is not necessary to continue the inhalation of the drug daily. As a prophylactic measure, it is extremely wise to inhale this drug every

two or three months for a period of three consecutive days. When the patient is relieved by trichlorethylene therapy, sensory anesthesia does not occur.

Alcohol injection of the second and third divisions is only palliative, the relief usually occurring from six to eighteen months, occasionally as long as seven years. The unfortunate fact is that, after repeated alcohol injections, a period arises wherein further injections of the nerve do not relieve the pain, primarily because a marked fibrosis has occurred about the nerve, thus preventing the infiltration of alcohol. In Figure 1 the methods of alcohol injections are indicated as used by the neurosurgeon, though the usual mandibular block utilized by the dental surgeon is efficacious for third-division pain. Alcohol should never be injected into the first division, because of the proximity of the nerves to the eye and the resulting dangers frequently arising therefrom, particularly paralysis of the ocular muscles, and occasionally blindness. I, personally, do not favor alcohol injection of the ganglion, because of the danger of infiltration into the pons along the nerve branch. Numerous such cases of pontile destruction have been reported in the literature.

The surgery of the trigeminal tract has reached the stage of great efficiency. The pain can be absolutely relieved permanently with the minimum risk to the patient, with the surprisingly low mortality of 0.26 per cent. The present accepted operation is that described by Spiller and Frazier, wherein the sensory root is partially sectioned. As the disease rarely involves the ophthalmic division, the sensory supply to the cornea is maintained so as to prevent a keratitis (fig. 2). The operation can be performed as readily in the old as in the young, and leaves the patient without any facial disfigurement. Intracranial section of the three divisions of the trigeminal nerve, as well as removal of the ganglion, has given way to cubtotal section of the sensory root. Conservation of the mo or root is also carried out so as to prevent

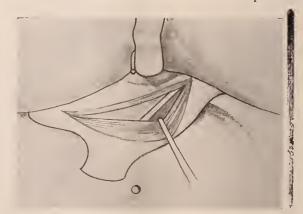


Fig 2. Subtotal resection of the trigeminal nerve. The lower one-third of the ganglion has been retracted, showing the motor root in situ. The upper one-third of the ganglion intact, so that the sensory supply to the cornea is preserved thus preventing a keratitis.

paralysis of the muscles of mastication and to leave the patient in a position for a bilateral operation, if such may be needed (fig. 3).



Fig. 3. Case wherein a subtotal resection of the sensory root has been performed. Note the absence of scar, as well as absence of facial paralysis.

#### SECONDARY TRIGEMINAL NEURALGIA.

POST HERPETIC TRIGEMINAL NEURALGIA

During the acute attack of herpes, a severe, continuous pain is referable to the trigeminal distribution and usually disappears with the healing of the cutaneous lesion. Occasionally the pain may persist for several weeks and then gradually subside, and still more rarely, the pain may continue on for years without cessation, varying in intensity and closely simulating the pain of true trigeminal neuralgia.

Very often all therapy directed to the trigeminal tract, even with section of the sensory root, does not give relief. This is true particularly in the aged and the complaint is of a constant, dull, burning and aching pain, accentuated with paroxysms of the sharp, shooting variety. This can only be explained on a basis of central pathology, such as a perivascular infiltration in the internal capsule. These cases must be approached with great skepticism, considering the probability of central pathology accounting for the pain, rather than any involvement of the peripheral tracts of the trigeminal nerve.

#### TUMORS OF THE GASSERIAN GANGLION

Tumors of the Gasserian ganglion result in pain referred to the trigeminal distribution. However, as a tumor is definitely invasive and destructive, pain is a manifestation of irritation, whereas the numbness which occurs in these cases is caused by nerve destruction. The numbness is diagnostic of tumor. Frequently the earliest clinical sign manifested is an absence of the corneal reflex, and, should this exist, the diagnosis of tumor is most likely. Tumors may occur primarily in the ganglion, the sensory root, or may involve the ganglion secondarily from other regions in the brain (fig. 4).

#### INFLAMMATIONS OF THE GASSERIAN GANGLION.

Inflammations of the Gasserian ganglion are extremely rare, and may be secondary to an otitis media with abscess formation of the ganglion. Gradenigo's syndrome, which consists of otitis media, with or without involvement of the mastoid, is accompanied by sixth nerve palsy as well as trigeminal pain. The production of this trigeminal pain has not been definitely explained. Gradenigo attributed it to infection in the air cells at the tips of the petrous portion of the temporal bone, and also in the region of the ganglion, as it lies over these cells. Vogel considered it

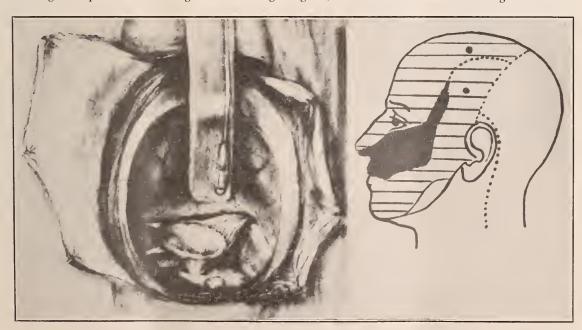


Fig. 4. A tumor of the Gasserian ganglion. The adjoining figure shows the area of sensory anesthesia.

due to a localized meningitis over the apex of the petrous bone, and Kuick believed it due to a toxic neuritis.

#### ANEURISMS OF THE INTERNAL CAROTID.

Aneurisms arising from the internal carotid, or in portions of the circle of Willis, may reach such size as to press upon the ganglion itself, or upon the branches of the fifth nerve. Pain referred to the trigeminal distribution may be the first sign of cerebral aneurism, anesthesia developing at a later period.

#### MULTIPLE SCLEROSIS.

Multiple sclerosis may occasionally manifest itself by pain in the trigeminal distribution. Of course, other neurological signs are necessary to clinch the diagnosis and are always present.

#### SYPHILIS.

Syphilis may occasionally involve the Gasserian ganglion and produce symptoms of trigeminal neuralgia. For this reason, it is well to take a Wassermann in suspected cases.

#### THROMBOTIC LESIONS.

Thrombosis of the posterior inferior cerebellar artery may result in degeneration of the fifth root of the fifth nerve. Pain would then be referred to the trigeminal distribution. Here, again, additional neurological signs will definitely rule out true trigeminal neuralgia.

#### DENTAL PULP STONES.

A condition causing severe attacks of lancinating pain referable to one tooth, or several teeth, is a disease seen more frequently by the dentist. It is caused,



Fig. 5. Dental pulp stones present within teeth.

in many cases, by pulp stones, which are calcareous nodules imbedded in the pulp, and which press upon the nerves. X-ray will demonstrate these nodules. Extraction of the tooth abolishes the pain (fig. 5).

#### IMPACTED THIRD MOLARS.

The dental surgeon is often confronted with impacted teeth which produce pain closely simulating trigeminal neuralgia. Removal of these impactions immediately clears up the pain.

#### TRAUMA

Following fracture of the skull, as well as fracture of the jaw, the ganglion may be invloved, as well as

the peripheral portion of the trigeminal tract. The pain here usually clears up following regeneration of the nerve.

#### UNKNOWN ETIOLOGY

Occasionally pain referable to the trigeminal tract may be continuously troublesome—though not excruciating. Possibly a distant focus of infection may be the etiological factor, but of this one cannot be too certain. Following an alcohol injection, the pain instantly subsides and, when the alcohol wears off, the pain does not return.

#### NEURALGIA DUE TO FACIAL MALIGNANCY

Malignant disease about the face and neck, with the terrific pains that result therefrom and the extreme discomfort associated with sloughing surfaces, make the patient decidedly miserable. The cauterization and x-ray treatment, which is carried out, causes the most torturing pain. It is in these cases that injection of alcohol, or section of the various nerve roots, will greatly ameliorate pain and lessen the patient's suffering and will, in addition, permit the surgical and plastic procedures to be performed painlessly.

Pain deep in the ear is a symptom difficult to relieve, and it is for this reason that section of the glossopharyngeal, or the tenth nerve, may be indicated. Upon rendering these patients pain-free, the morale is greatly increased, morphine unnecessary, and even though these patients realize that the procedure has nothing to do with a cure of their primary disease, they are deeply grateful for the relief of this continuous, terrific, and unbearable pain.

#### SEVENTH CRANIAL NERVE

The sensory supply to the ear is unusually complex and has been attributed to the fifth, seventh, eighth, ninth and tenth cranial nerves and the cervical perves. Thus we note ear pain may be produced by involvement of numerous cranial nerves. Reflex otalgia is probably the more important type of ear pain which is often secondary to inflammation in the mouth and to diseased teeth or jaw infection. Not infrequently does an infected tooth on one side of the jaw refer pain to the opposite ear. These pains will not be relieved by clearing up mouth sepsis or the extraction of teeth. Herpetic inflammation of the geniculate ganglion, with facial paralysis and acoustic symptoms, may be the responsible factor. Therefore, it is advisable for the dental surgeon to examine the ear carefully to determine whether any small vesicles are present, or whether a facial paralysis exists, with or without deafness. In such cases, extraction of teeth is without avail and cannot in any way relieve the pain.

Idiopathic otalgia, which consists of acute, paroxysmal lancinating pains, in attacks occurring daily or with longer intervals of freedom, is a definite discase entity very much like trigeminal neuralgia. The studies of Ramsay Hunt on herpetic inflammation of the ear were the first to draw attention to the sensory distribution of the seventh cranial nerve to the ear. Later, Taylor and Clark reported a definite case of seventh nerve otalgia, which was relieved by section

of the seventh nerve and the nerve of Wrisberg, as well as part of the eighth nerve. This type of neuralgia is extremely rare and the author has had only one case under his observation. This was a young man, aged 38, who for the past four years had had attacks of terrific, lancinating, burning pain situated in the tragus, antitragus, and lobule of the left ear. These attacks would occur rather insidiously; the ear would throb, become red, and gradually, after several hours, the pain would reach an unbearable height. When it seemed almost impossible further to endure this pain, it would suddenly cease-very much as if an abscess under tension had been incised. For some six to eight hours after, a feeling of discomfort would persist in the ear. As the attacks occurred only at lengthy intervals, and in view of the fact that there had been only three attacks in the four years, surgery was deferred until the attacks became more frequent.

## NEURALGIA OF THE EIGHTH CRANIAL NERVE.

Ringing in the ear, associated with deafness, may frequently be considered secondary to a dental involvement. However, there is a definite neurological syndrome, Meniere's disease, which consists of attacks of nausea and vomiting, with ringing in the ears and deafners. This is caused by pathology of the eighth nerve. At times these attacks may become so severe that the patient is completely incapacitated. At other times, the interval of freedom is quite lengthy and the patient may be up and about most of the time. If the attacks are of great severity, section of the eighth nerve, as described by Dandy, absolutely relieves this clinical picture. Persistent ringing in the ear should always be looked upon with suspicion as many times tumors of the eighth nerve manifest themselves at an early date by this important clinical symptom.

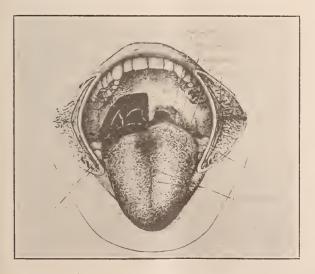


Fig. 6. Sensory supply of the glossopharyngeal nerve. This indicates the area of pain.

## NEURALGIA OF THE NINTH CRANIAL NERVE.

The sensory supply of the glossopharyngeal nerve may be noted in figure 6. That this pain may be confused with pathology referable to the mouth, or oral sepsis of the mouth, or diseased teeth, may readily be comprehended. The pain in glossopharyngeal neuralgia is acute, spasmodic, lancinating and occurring in attacks lasting a few minutes. The pain starts in the pharynx, the tonsillar fossa, or the base of the tongue, and radiates to the ear, the neck, or the tympanum. The trigger zone is usually in the tonsillar fossa. This pain may be brought on by swallowing or yawning. Relief may be readily obtained by intracranial scetion of the glossopharyngeal nerve.

### NEURALGIA OF THE TENTH CRANIAL NERVE.

Occasionally, deep-seated pain in the ear and throat, particularly due to invasion of the face by carcinoma, may be aided by section of the tenth nerve. The evidence for this point, however, is extremely scant and much more work must be carried out to justify such surgery. Pain of tuberculous laryngitis is referred to the superior laryngeal nerve of the vagus and can be relieved by injection of alcohol or by section. This pain is brought on by swallowing because of irritation to the larynx and epiglottis by food passing over the structures.

#### ATYPICAL FACIAL NEURALGIA.

This neuralgia is one of the most important, primarily because of its unknown etiology and the failure of clinical relief. As the physician is unable to alleviate the pain, the patient is then referred to the dentist for the extraction of teeth. Unfortunately, this does not relieve the patient from his suffering. More frequently the pain becomes worse, and in addition to complaining of a more severe pain, the patient is minus his or her teeth. Practically all patients referred to the author with atypical neuralgia, have had one or more teeth extracted, and all of the patients declared their pain had been increased by this procedure.

From the group of trigeminal neuralgias have been separated a series of patients complaining of continuous facial pain, which is not relieved by section of the sensory root, or any other procedures which relieve the pain of trigeminal neuralgia. After a more meticulous study of patients suffering with this pain, it was found that the distribution was not in the trigeminal tract, but continued beyond its bounds. This prin may locate in single areas (fig. 7), or in an entire arc (fig. 8).

The pain of atypical neuralgia is persistent and continuous. There are, however, at intervals of several days to several weeks, severe exacerbations of pain which last from two or three hours, to three or four days. During this period the patient may be bedridden and suffer intensely. Frequently these severe attacks begin rather insidiously, reach their height after two or three hours, and then, possibly at the end of the second or third day, slowly subside so as to resume the chronic stage. During this

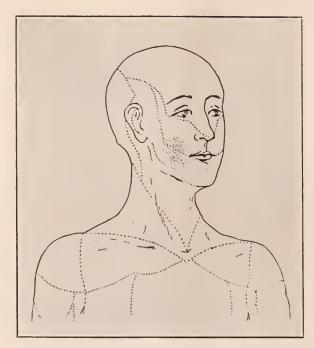


Fig. 7. A single area of pain of the atypical type.

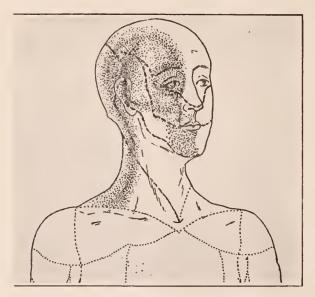


Fig. 8. A complete arc distribution in a case of atypical neuralgia. Note how the area of pain crosses the broders of the trigeminal distribution.

chronic phase, the patient will complain of persistent pain, yet there is no evidence of pain in the facial expressions. These patients may talk to you, explain their symptoms and, when questioned as to the presence of pain at that particular time, will always say that they are suffering with pain at that moment. This is quite different from trigeminal neuralgia, wherein the attacks last only a few seconds, are excruciating, but the patient is entirely pain-free during the intervals.

In trigeminal neuralgia, the pain is on the surface of the face, because it is caused by the trigeminal nerves: in atypical facial neuralgia, the pain is deep-seated, because it is probably the result of a disease of the sympathetics of the blood vessel, and it, indeed, follows the outline of the arteries. The pain is extremely difficult to describe and an extraordinary number of adjectives have been utilized by patients. Associated with this pain are sympathetic phenomena, such as lacrimation, edema of the eye lids, unequal pupils, corneal injection, exophthalmos, salivation, nasal discharge, flushing of the face, aural discharge, nausea and vomiting, perspiration.

Many procedures have been utilized for the relief of this pain, all, however, proving of little avail. Among the procedures attempted for the alleviation of this pain have been: injection of alcohol in branchcs of the trigeminal nerve; cocainization and injection of the sphenopalatine ganglion; extraction of teeth; drainage of sinuses; supra-orbital and infraorbital nerve avulsions; nasal operations; cervical sympathectomy (Frazier); stripping of the peri-arterial plexus; subtotal section of the sensory root of the trigeminal nerve; mastoid operations, and pelvic operations. Of late, a realm of hope has been given these sufferers. Paravertebral block has relieved an occasional case, and an occasional report of relief by section of the stellate ganglion appears in the literature. Upon a clearer comprehension of the sympathetic system, it is quite probable that these unfortunate patients may eventually be relieved from pain.

#### SPHENOPALATINE NEURALGIA.

Sluder, after a careful study of the anatomical relationship of the sphenoid and posterior ethmoids, demonstrated that in many cases these cells were in close proximity to the nasal ganglion. He assumed that, if inflammation of the optic nerve could occur from these sinuses, there was no reason why the nasal ganglion would not suffer.

A history of coryza is followed by pain in the root of the nose, in and about the eye, the upper jaw and teeth, occasionally the lower jaw and teeth. This pain also extends backward to the temple and above the zygoma to the ear, and is always severest at a point five centimeters back of the mastoid. The pain also radiates to the occiput, neck and shoulders, or even the arm, forearm, hand and fingers. Associated with this pain is a stiff or aching throat, or itching of the hard palate. In addition, there are sympathetic symptoms which may occur even without pain. The patient is seized with severe sneezing attacks and a thin, hot profuse secretion appears; the eyes are reddened; there is increased lacrimation; the pupils dilate and there are dyspnea, dry rales, asthenia, and photophobia.

If these cases do not get better by cocainization, Sluder believes the pain is caused by a more central lesion of the maxillary and vidian nerve, secondary to sphenoidal inflammation. Intrasphenoidal application of cocaine is then indicated. Injection of the ganglion, or applications of formaldehyde and silver are indicated in the more severe cases. If the pain is

not relieved by these treatments, the spenoid should be operated upon, because the nerve and ganglion would then be imbedded in a chronic, inflammatory tissue. Many of these cases have only a transitory relief. These cases Sluder could not explain clinically and believed future study would necessarily have to solve the problem. As this pain frequently is diversified, teeth also are extracted. It has been the author's experience that the chronic picture of sphenopalatine neuralgia does not exist; that is, patients suffering from pain lasting for a period of six months or more, usually belong to the atypical neuralgia group; whereas, the very acute pains, seen early, and of short duration may be relieved by cocainization. Frequently, acute sphenoiditis produces the very symptom picture described above and relief is brought about by drainage and cocainization of the sphenopalatine ganglion.

#### PAINFUL TIC CONVULSIF.

This clinical picture was first described by Cushing. It consists of a spasmodic contraction of the facial muscles, accompanied by intense pain. All types of surgery were carried out for this picture, such as: the extraction of teeth; surgery of the trigeminal tract; section of the facial nerve. None, however, resulted in any relief of pain or muscle spasm. Whether this disease is of central origin is not known, but it may also be classified among the incurable types of pain.

#### CONCLUSIONS

Surgery offers a relief for many of the neuralgias of the face, with an exceedingly low mortality of 0.26 per cent.

Atypical neuralgia and painful tic convulsif are types of pain which should be recognized so that useless surgical procedures may not be attempted. At present, we can offer no definite relief for these types.

Neuralgias of the face very frequently are secondary to systemic diseases, which requires a complete medical examination of such patients, as well as dental study.

#### BIBLIOGRAPHY

- 1. Bell, Sir Charles: The Nervous System. Edition 3, London, 1844.
- 2. Cushing, Harvey: The major trigeminal neuralgias and their surgical treatment based on experiences with 332 gasserian operations. The varieties of facial neuralgias, Am. J. M. Sc. 160, 2, 581, p. 157.
- 3. Dandy, Walter E: Menier's disease, diagnosis and treatment. Arch. Surg. June, 1928.
- 4. Dandy, Walter E.: Section of the sensory root of the trigeminal nerve at the pons. Bull. Johns Hopkins Hosp., 36, 105, February, 1925.
- 5. Frazier, Charles H.: Subtotal resection of the sensory root for the relief of major trigeminal neuralgia. Arch. Neurol. & Psychiat., 13, p. 378, March, 1925.
- 6. Glaser, Mark A.: Surgical and nonsurgical facial neuralgias. California & West. Med., 32, 3, March, 1930.

- 7. Glaser, Mark A.: Treatment of trigeminal neuralgia with trichlorethylene. J. A. M. A., 96, pp. 916-920, March 21, 1931.
- 8. Glaser, Mark A.: Atypical neuralgia, so-called. Arch. Neurol. & Psychiat., 20, pp. 537-558, September, 1928.
- 9. Glaser, Mark A.: Modern methods for the relief of tic douloureux. Western J. Surg. Obst. & Gynec. 39, 12, December, 1931.
- 10. Glaser, Mark A.: Bilateral trigeminal neuralgia (To be published in Arch. Neurol. & Psychiatry).
- 11. Hunt. Ramsey: Sensory system of facial nerve and its symptomatology. J. Nerv. & Ment. Dis. p. 321, 1909.
- 12. Koerth, C. J.; McCorkle, R. G.; and Hill, H. P.: Alcohol injection of internal laryngeal nerve in painful tuberculous laryngitis. Texas State J. Med., 24: 251-326, August, 1928.
- 13. Levy, Ferdinand; and Baudouin, Alphonse: Les Injections profondes dans le traitment de la neurlagia saciale rebelle., Presse Med., 14, 108-109, 1906.
- 14. Patrick, H. T. Trifacial neuralgia and its treatment. J. A. M. A., 62, p. 691, 1915.
- 15. Russell, E.: Two primary tumors of the gasserian ganglion. J. A. M. A., page 413, February, 1925.
- 16. Stockey, Byron: Glossopharyngeal neuralgia. Surgical treatment with remarks on the distribution of the glossopharyngeal nerve. Arch. Neurol. & Fsychiat., 29, p. 702, October, 1928.
- 17. Taylor, Alfred; and Clark, Pearce: True tic douloureux of the sensory filaments of the facial nerves, J. A. M. A., p. 2144, Dec. 25, 1909.

## BRAIN ABSCESS FROM THE OTOLOGIST'S VIEWPOINT

## R. A. DUNCAN, M. D., F. A. C. S. Amarillo, Texas.

(Presented before the New Mexico Medical Society, at its Fiftieth Annual Meeting, held at Santa Fe, N. M., May 19-21, 1932.)

This paper is written to call your attention to the status of brain abscesses as seen by the average physician. I shall first present for your consideration cases taken from the records of Saint Anthony Hospital and Northwest Texas Hospital, Amarillo, Texas. These cases were seen and diagnosed by many different types of practitioners. Outside of three or four, no attempt was made to diagnose the site of the lesion or to institute treatment other than palliative, the reason being the hopelessness of the cases when seen and the realization that treatment in the later stages is futile. The records indicate two things: (1) the inclination to procrastination on the part of the patients and the hopelessness of the condition

during the late stages; (2) the advantage that could be had from having trained neurologists and brain surgeons in all hospitals. I call your attention to these records not as a critic, but to draw conclusions for our mutual benefit.

#### CASE HISTORIES

Case No. 1623. St. Anthony Hospital record. White male, age 41 years. Entered hospital October 18, 1931. History of right ear discharging since childhood. Complains of severe pain in right temporal region, of one weeks duration, word aphasia, and tenderness over right mastoid region. No rigidity of neck. Respiration 20 to 35; pulse, 60 to 90; temperature, 100.5° to 104.5°. Blood count: W. C., 13,000; poly, 90; spinal cell, 12 cm. Wassermann negative. Operative record shows cholesteatomatous material in antrum, pus was found in the temporal lobe and right ventricle. Patient died October 26, 1931.

Case No. 895. St. Anthony Hospital record. White male, age 54 years. Entered hospital June 12, 1930. History of several Neisserian infections. Wassermann negative. Symptoms began about two months ago with projectile vomiting. One week ago, vomiting occurred spontaneously and with headaches. Choked disk, left pupil elliptic, does not react to light and distance. Right pupil reacts sluggishly. Exaggeration of deep reflexes. X-ray does not show demonstrable lesion of head. Answers questions slowly but correctly. Spinal fluid came out under pressure. Cell count, 20. Blood count: W. C. 20, 600. Urine, 3 plus albumin. Temperature ran from 97° to 96°; pulse, 70 to 90; respiration, 15 to 20. This patient died June 18, 1930.

Case No. 1738. St. Anthony Hospital record. Negro boy, age 15 years. Entered hospital November 5, 1930. Was admitted to hospital in an unconscious condition. History of discharging left ear for about one week previous to entering hospital. Suddenly felt a severe pain in left side of head, no rigidity of neck, but paralysis of left side of face. Blood count: W. C., 28,400; poly, 92; small lymph., 16; large lymph., 2. Diagnosis brain abscess. Died six hours after admission to hospital.

Case No. 2334. St. Anthony Hospital record. White girl, age 7 years. Eight or nine days previous to entering hospital on May 7, 1929, she was seized with a severe pain in the head, following a chronic ear discharge, right ear. Had continued high fever—104 degrees,—profuse sweating and chills. Temperature previous to death, 107 degrees; pulse, 150; and respiration, 38. Died six hours after entering hospital.

Case No. 454 St. Anthony Hospital record. White female, widow, age 26 years. Admitted to hospital on March 24, 1930, 4 p. m., in an unconscious condition, and died 12:07 a. m., March 25, 1930. The history, which was given by her parents, was of an ear infection of many months' duration. Suddenly became unconscious on March 24, 1930.

Temperature, 106°; pulse, 140; respiration, 10. Wassermann positive (3 plus). Spinal fluid cell count, 2 per cm. Blood count: W. C., 19,550; poly., 93; small lymph., 5; large lymph., 2.

Case No. 8945. Northewest Texas Hospital record. White male, age 51 years. Family history negative. Habits good. Has been sick for eighteen months, slight headaches every two or three days. For past two days has been nauseated, vomiting, extremely nervous, and picking at bed clothes. Entered hospital February 7, 1930. Temperature on admission, 98.6°; respiration 24; blood pressure, 118/60. There was a paralysis of left extremities, no reflex on left side. History of chronic running ear for ten years, right side. Pus from ear very foul. Blood count: W. C., 16,000; poly., 88. Died February 10, 1930. Postmortem: The calvarium was removed in the usual manner and the brain exposed. Then the dura was dissected off. The pia mater was intensely injected and adherent. A slaty-gray area, 2.5 cm. by 3 cm. in diameter, with a small sinus leading from the third ventricle to upper portion of mastoid area and connecting with antrum, filled with pus, was found.

Brain abscess is a common complication of middleear disease. It may occur during an acute process, but more frequently follows during the course of a chronic middle-ear suppuration. The otologist meets with brain abscess only occasionally, but sufficiently often to impress him with the seriousness of the condition. It is a condition requiring surgical intervention if the patient is to live. The mortality, even with operation, is frightful, but it is the only hope and death is almost sure and certain without it.

The symptoms of brain abscess are often vague and ill defined. Even when present, it is hard to differentiate from meningitis, and when diagnosed, the site of the lesion is often extremely difficult to determine, but we have certain signs which, if followed, will lead us, at least, to a fairly accurate knowledge of conditions present. These signs are:

- 1. Any inflammatory process of the middle ear, acute or chronic, is a potential focus for brain abscess. If the middle ear is infected, the route is short to the brain substance, so, in the presence of a discharging ear, if there is sudden pain, or a chill, or any symptom uncommonly associated with the discharge, our attention should immediately be on guard as to brain complications. Patients with chronic running ears give premonitory signs of impending danger by not feeling well, malaise, restlessness, indigestion, loss of weight, weakness of arms and legs, and headaches. It is said by some observers that brain abscess can be latent for many years before development of acute symptoms.
  - 2. Headache: There is headache, severe head-

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ache, unilateral mostly, diffuse at times. No drug gives relief, except very temporarily. There is sometimes a tendency for the headache to diminish. This may be due to the dulling of perception as the result of increased intracranial tension. A periodicity is noted in some cases.

- 3. Mentality: Case No. 895, St. Anthony Hospital records show, "Patient answers questions slowly but correctly." This is typical. A question is asked, the patient acts as if he had not heard, then answers slowly. Reasoning is slow and difficult, ability to concentrate is lost. Drowsiness is frequently seen. The patient is apparently asleep and has to be aroused for the administration of food and drugs. This drowsiness develops into coma and death. If the abscess ruptures into the ventricles, death may occur more suddenly.
- 4. Pulse: At first the pulse is rapid. It gradually becomes slower, but just prior to death it becomes much accelerated.
- 5. Ocular signs: Ocular signs must be in rela tion to the findings. To base conclusions on eye findings alone will lead to many errors. There is often no change in the eye grounds. When there is, there is a variation from a slight haziness of the optic disk, through all the grades of optic neuritis to choked disk. Heretofore, much delay in diagnosis was due to a misconception of the choked disk. It is now commonly recognized and appreciated that a measurable papilledema is the end result of a continued pre-existing intracranial pressure and that dilated retinal veins and an edematous swelling at the margins of the optic disk are the early signs. No longer is it necessary to wait for a measurable papilledema before a diagnosis of intracranial pressure is made. Eye-ground changes may be found in either or both eyes. When unilateral, the changes are not always on the side of the lesion. The factor in optic neuritis development depends to a degree on the local condition within the eyeball. It develops in the eye that has the lower intra-ocular tension, regardless of the site of the abscess. The changes in the field of vision are helpful but not conclusive. Nystagmus is present or absent according to the site of the lesion. The direction is often hard to determine, so we often confuse ourselves by trying to determine the direction. It is a symptom, however, that should be taken into consideration.
- 6. Temperature changes: The temperature varies. Typically it is moderately high at first, Then low, and, near death, is extremely high. Chills are sometimes seen, but profuse sweating is rare.

- 7. Blood picture: There is no typical blood picture. The leukocyte count is from 12,000 to 20,000. The polymorphelar leukocyte percentage is high.
- 8. Vomiting: Many of these patients vomit. When first seen the symptoms may lead one to think of some gastro-intestinal condition. When a patient has a running ear and vomits, the ear, and not the stomach, should receive first consideration. A convulsion occurring during the course of a discharging ear is almost pathognomonic of a brain abscess.

When the abscess affects the cerebellum, which is the coordinating center of the brain, there is a disturbance of muscle movements, manifested by unsteady gait and a tendency to fall. This is an early symptom and progresses to a paralysis in the late cases.

- 9. The x-ray does not often reveal an abscess of the brain and is of little aid.
- 10. Spinal cell count: So great an authority as W. P. Eagleton, in a paper before the American Academy of Opthalmology and Otolaryngology, once said, "I never do a lumbar puncture in any case where there is even a suspicion of an abscess which may involve either the posterior fossa or any part of the mid-brain cone that passes up through the tentorial ring." In these cases which I report, the attending physicians were less timorous, so we are able to learn how the spinal count runs in the majority of cases.

In the cases recorded here, the diagnosis was made too late to be of any benefit to the patient. They show the value of early diagnosis if surgery is to do anything other than hasten the end. Some one has very aptly said that "when a diagnosis is made of brain abscess it is too late to operate." The symptoms must be interpreted early if the patients are to be benefited. The classical symptoms cannot be waited for. When they appear, the case has progressed to a dangerous stage. It is important that we keep in our minds the potential danger of a chronic discharging ear, so that, when there is any deviation from its normal course-such as headache, vomiting, loss of smell, muscular weakness and other symptoms of this type—we be on our guard. Early diagnosis and prompt treatment are essential if we are to aid the patient.

#### DISCUSSION

DR. J. P. KANES (Santa Fe, N. M.): I am very appreciative of Dr. Duncan's splendid paper and think he deserves a great deal of credit for the intensive study he has made of this subject. In this connection, I am reminded of the immense amount of study and work done by Sir James Mac-

kenzie on the heart and how much the profession is indebted to him. Dr. Duncan is pursuing similar lines in his study of the brain and has brought to us, in my opinion, one of the most interesting papers of the meeting,

DR. DUNCAN (closing): I very much appreciate the pleasure and honor you have bestowed upon me by allowing me to appear before you. Like Mackenzie, I am a Scotchman, and can appreciate all the jokes perpetrated on my suffering kinsmen—for we all know that a Scotchman makes money first to make it last. I thank you very much.

#### IMMUNIZATION AND TREAT-MENT OF DIPHTHERIA

C. F. MILLIGAN, M. D. Clayton, N. M.

(Read before the New Mexico Medical Society, at its Fiftieth Annual Meeting, at Santa Fe, N. M., May 19-21, 1932.)

Our knowledge of diphtheria dates back to the time of Hippocrates, and as early as 100 B. C. the clinical picture was pretty well known and laryngotomy was practised for its treatment; but not until early in the eighteenth century did the study of the disease become productive. The later history of diphtheria contains its two most important epochs: the discovery of the bacillus by Klebs in 1883 and its isolation and cultivation by Loeffler in 1884; and the discovery of antitoxin by von Behring in 1892. In recent years immunity against the disease has been established by the use of toxin-antitoxin and toxoid.

With a knowledge of the disease dating back over 2000 years and with a specific immunizing agent and a specific treatment, the death rate holds about fifth place of all infectious diseases of childhood. Too many physicians consider the diagnosis of diphtheria easy and the treatment simple, and this attitude, I believe, is largely responsible for the prevalence of the disease and the complications that we so frequently encounter. If the medical profession would awaken to its responsibility we could do for diphtheria what we have done for typhoid fever.

It is not the purpose of this paper to go into the subject in an exhaustive and time-consuming manner, but to touch a few of the important and practical points in the prevention and treatment, and thereby stimulate more interest in the prevention and the proper management of the disease.

Certain clinical and laboratory facts regarding diphtheria toxin are essential to a clear understanding of the disease and its treatment. Toxin is the name given to the substance produced by the development or growth of the Klebs-Loeffler bacillus, and it is this toxin that unites with the tissues of the body to produce the symptoms that we recognize in patients affected with the disease. The following facts should be noted: (1) The toxin is absorbed rapidly by the tissues and from there it reaches the blood stream. (2) It is not secreted in any appreciable amounts into the cavity of the throat and cannot be washed out by gargles. (3) The quantity of toxin produced by a case cannot be measured, but the severity of the local inflammation, and the toxic after effects are crude measures; the amount of anti-toxin necessary to save the patient is of value but the need of a margin of safety prevents this being accurate. (4) The toxin probably combines with many tissues of the body but only in a few, such as the nerves, the heart, and other organs, are harmful clinical effects found. (5) The absorbed toxin acts with great rapidity on the tissues so that a fatal effect may be produced within thirty-six hours. (6) It has not been shown that toxin-tissue combinations may be broken by antitoxin or other treatment, but when antitoxin is present in the blood stream the toxin always combines with it rather than with the tissues. (7) In susceptible animals, toxin leaves the blood stream with great rapidity, while in non-susceptible animals it may remain in the blood for a long period.

Natural immunity to diphtheria is quite common. Over fifty per cent of the population is immune. Acquired immunity from an attack of the disease may last for years or it may last only a few weeks. Artificial immunity is also variable.

Diphtheria is much less contagious than measles or smallpox. In fact, it requires fairly intimate contact to transmit the organisms from one person to the vulnerable points of another. The nasal form is considered the most contagious, and this form very often escapes detection, because it is mistaken for a bad cold. The laryngeal type is probably the least contagious. The duration of the contagion varies. It may last for only a few days, while, in the case of some carriers, it may last for several years.

Children under six months of age are not very susceptible to diphtheria. This is probably due to the transmission of antitoxin from the mother to the child through the blood in utero. This immunity usually lasts about six months and is probably gone by the time the child reaches one year of age. After this age the child begins to build up some natural immunity, which increases until about the age of

twelve. The Schick test is unreliable in children under six months of age because of the lack of reactivity of the skin.

Antitoxin may develop spontaneously without the stimulus of the diphtheria bacillus. The ability to develop antitoxin is largely dependent upon heredity factors. There are individuals and families who seem to lack this protective force and in these strains the disease is apt to run a malignant course.

Diphtheria has a tendency to occur periodically in communities where immunization is not practised. Active immunization has proved successful and should be a requirement for all school children, as smallpox vaccination is here in New Mexico.

At present, there are four preparations used in immunization against diphtheria. The most popular is probably the toxin-antitoxin, because it has been in use the longest and is better known. Toxoid is rapidly taking the place of toxin-antitoxin with many pediatricians. Anatoxin and Lowenstein's diphtheria salve are used quite extensively in some hospitals in Europe. Time will not permit me to describe the preparation of these agents. I have used the toxinantitoxin and the toxoid and I prefer the toxoid to the toxin-antitoxin, because it is reported to have no reaction, it confers a higher degree of immunity in a shorter period of time and does not sensitize the patient to animal serum. The toxoid is said to confer en immunity of at least 95 per cent within six weeks after the completion of the immunization, and it probably lasts throughout the susceptible period of life. Bela Schick writes that the problem of active immunization to diphtheria is practically solved. If every precaution is observed there is no danger in its application.

There have been some sad experiences with the use of toxin-antitoxin. The first series of accidents occurred in Dallas, Texas, in 1919. Forty children who had been inoculaetd fell ill, five of them died. The mixture proved to contain too much toxin and little or no antitoxin. The second series was in Massachusetts in 1924 and was caused by a preparation that had been frozen. Since that time no accidents have occurred in America because steps have been taken to remedy the defects.

I wish that we had the time to go into the diagnosis of diphtheria, for I consider the diagnosis very important. Don't wait for the appearance of membrane before suspecting diphtheria. One may be compelled to make a tentative diagnosis by exclusion. Then give antitoxin and clear up the diagnosis afterward.

In the treatment of diphtheria, we first think of antitoxin, which is really the one and only treatment. The earlier it is given, the smaller the dose required and the better the results obtained. Abt believes that 1000 units administered on the first day is worth more than 10,000 units after the fifth day of the disease.

Antitoxin does not destroy the bacilli. It neutralizes the toxin produced by the bacilli; but after the toxin has united with the tissues the antitoxin has no power to break this union. Therefore, the damage, once done, is beyond the power of medication to relieve. All that we can expect from antitoxin is to neutralize the free toxin in the blood and prevent further tissue union. The size of the dose must therefore be determined by the severity of the case and the time elapsing before treatment is begun. Place states that no harm can arise from an overdose of antitoxin, but great harm may come from too small a dose. Abt thinks that we should give from 15,000 to 60,000 units, that from 10,000 to 20,000 units should be given intravenously and 30,000 to 40,000 units intramuscularly in severe cases. He believes that repeated doses may lead to gangrene and, if given as long as three or four days after the first dose, there is great danger of anaphylactic shock.

Children with diphtheria may die from either of two causes. They die from mechanical obstruction with membrane in the larynx or lungs, or they die from the effect of diphtheria toxins upon the various organs of the body. The first cause of death is easily recognized, but the latter is more remote and the death is attributed, in many instances, to conditions which have no connection with diphtheria.

Diphtheria begins as a localized disease, usually in the throat, and later becomes more general in its action. The toxin is a slow poison, taking some weeks to produce all of its effects.

Too many of us in general practice expect antitoxin to carry the whole load in these cases. As soon as we make a clinical diagnosis of diphtheria, we give sufficient antitoxin to bring about a reduction in temperature and alleviation of the other symptoms, and consider our patient on the high road to recovery and take his name off our visiting list. If, after a week or ten days, our little patient suddenly dies, or, a little later on, we are called back to see a case of paralysis, the relatives are sure that the complication was caused by the antitoxin, and we have a suspicion that the antitoxin was not as pure the manufacturers claimed it to be. We expected the antitoxin to cure our patient. Antitoxin in sufficient

doses neutralizes any toxins in the circulation and any that may be produced after its administration, but it will not neutralize the toxins that have been absorbed and become fixed in the tissues. If this be the case, how important it is that we give the antitoxin as early as possible.

From a clinical standpoint, diphtheria affects three organs principally: the kidneys, the heart, and the nervous system. The toxin probably affects the entire organism, but the organs mentioned are the ones that show the effects of the disease.

The first of these organs to be attacked are the kidneys. During the first week, we will find, upon the examination of the urine, albumin and casts, sometimes in large quantities. Cushing tells us that this is a degenerative nephritis found in all cases, and in serious cases causing a diminution in the amount of urine passed, with albumin and casts, but never causing edema or uremic symptoms. This form of nephritis does not produce marked symptoms and clears up within a few weeks, leaving no permanent effects.

The next organ to be affected is the heart. The toxin attacks the heart almost as soon it does the kidneys. The heart complication is far more serious than that of the kidneys. The most common cause of death from diphtheria is heart failure. Cardiac failure following diphtheria has for a long time attracted considerable interest as to its cause, but it is only within the last few years that we have proved that the failure is due to degenerative myocarditis. The occurrence of this myocarditis is apparently as constant as the nephritis, but is harder to demonstrate. Only through changes in color of the skin and the character of the pulse in mild cases does one suspect any trouble. Neither blood pressure nor cardiograph readings help any until the case is well advanced. Cardiac dilatation, with vomiting, heart block, or sudden death, terminate the picture in the worst cases. The symptoms of myocarditis show themselves first on the fifth to the seventh day, and usually culminate on the tenth to the fourteenth day, although it is several weeks before the heart returns to normal. After the twenty-first day has passed, one should no longer fear cardiac breakdown, according to Cushing. Cushing also states that he has been able to follow up a number of the severe cases and that no case after one year showed any pathology of the heart.

Naturally, we are interested in the treatment of these cases, so I shall give you the treatment followed at the Alexandra Hospital in Montreal, Canada. In this hospital they give absolute physical rest, prohibiting as far as possible the movement of the limbs. If vomiting begins, all nourishment must be stopped for two or three days. Morphine is given if there is restlessness, but this rarely occurs unless the case is hopeless. Digitalis does harm by causing vomiting and increasing the tendency to heart-block. Other heart stimulants seem of little use. If the little patient can be tided over a few days, the natural processes of repair will effect a cure.

The third clinical manifestation of the toxin is upon the nervous system, and usually makes its appearance in the general paralysis occurring about two weeks later. Walshe was the first to demonstrate that these paralyses followed any definite form. He has shown us how the first effect of the toxin on the nervous system is local, causing a paralysis at the site of the lesion, then passing along the course of the nerves to the central nervous system, affecting first the local nerves, then the neighboring nuclei, and then the general nervous system as a whole. The paralysis almost invariably culminates at the end of the sixth week. The treatment of this condition is principally rest and nutritious diet. The prognosis as regards life depends largely upon the involvement of the diaphragm and the muscles of respiration. Fortunately, these muscles are the last involved and their paralysis is short lived. If one can keep the patient alive for a week, all symptoms will subside, for in this, as in all other toxic sequelae of diphtheria, recovery is absolute and complete in the process of

If this clinical picture be a true one, it will be of benefit to us in managing our diphtheria cases, first in beginning treatment early with sufficient antitoxin to check the disease and neutralize the toxin in the circulation; second, by testing the urine during the first week to determine the amount of toxins absorbed; third, by watching the heart during the first and second weeks; fourth and finally, during the fifth week, in guiding the patient over the dangers of respiratory paralysis.

#### DISCUSSION

DR. M. K. WYLDER (Albuquerque, N. M.): I think we owe a vote of thanks to Dr. Milligan for working up this question. It may seem to a great many of you that we ought to know all about diphtheria, and I must say it is a shame to note the death rate on this account, when we know how to prevent this disease and that, if one has recently been exposed, a small shot of antitoxin will develop permanent immunity. No child should ever die because of diphtheria. Just as a baseball player muffs a fly ball which comes out in his field

and makes an error, so is every death from diphtheria due to some error. Either the doctor or the nurse has erred. The nurse sometimes thinks the condition is only a sore throat and does not give the doctor a chance, but if, when the doctor arrives, he does not work quick enough, then it is his error and his name should be put on the blackboard. Dr. Milligan covered the field very thoroughly and beautifully. In regard to the antitoxin, many doctors feel that they are not able to start with it until they have a positive diagnosis; and they do not realize the importance of giving it early. They say, "We will take a culture and when we get the report, if positive, will give a dose of antitoxin". By this delay, they may be throwing away the opportunity to save the life of the patient. It is not essential to await the culture; give the antitoxin. It is far better to give it and not need it than to need it and not give it. There is no better treatment for the septic sore throat than a big dose of antitoxin, anyway. With the ordinary cases, give 10,000 units intravenously and, if given early, you will not have the complications Dr. Millican described.

DR. A. S. LATHROP (Santa Fe, N. M.): Dr. Milligan's paper was so excellent and complete that I do not see where I can add anything of interest. One thing, however, has not been stressed and that is the importance of taking a Schick test on children anywhere from three to six months after the antitoxin has been given. Figures show that only about 75 per cent are given immunity; the other 25 per cent are susceptible to diphtheria. Dr. Wylder spoke of the importance of giving antitoxin early—that cannot be emphasized enough. Ten thousand units the first or second day will have much more effect than fifty thousand on the fourth or fifth day of the disease. Complications are avoided by giving it early. Another point is that, in cases we do not see until the fourth or fifth day, the importance of rest cannot be overemphasized. Those whose body tissues have already been poisoned by the toxins need considerably more rest. Diphtheria is much more serious in rural areas than in cities, as in cities they build up their own immunity sooner than in the country.

DR. J. R. EARP (Santa Fe, N. M.): I merely want to mention that we publish helpful articles on public health questions every week-about sixteen English papers and all the Spanish papers are printing, regularly, rules to be observed and the importance of having children immunized. If any of you know that your local newspapers are not receiving these items, if you will let us know, we will gladly furnish them to every editor who can be persuaded to accept and publish them. In regard to reports from the Laboratory, just because a report may be negative do not get the assurance that your case is not diphtheria. There may be a slip somewhere between the taking of the swab and the Laboratory. They may not survive the journey. I know of one or two cases of death from clinical diphtheria, in which the Laboratory sent out negative reports. If you have cases of diphtheria in which you get negative reports from the Laboratory, I wish you would let us know. We want to go over the reports and want them to be accurate. Finally, I should like to say a good word for toxoid. I believe this is going to be very much better and give better results, as you can make your test first and adapt your treatment accordingly. We want to protect the younger children, but what is the right time to give them this immunization? After all, it is the one to three to five-year-old children who are dying from diphtheria. Therefore, if we start with the first birthday, we are not going to lose so many children. In New York, the State Health Commissioner sends out instructions to every parent nine months after a child is born. Maybe that would catch practically all our deaths from diphtheria in New Mexico.

DR. C. A. MILLER (Las Cruces): I had quite an experience lately—had seven cases of diphtheria in one family. There was only enough antitoxin for four of the cases and, when a further supply was received, two of the cases were so much better, I decided to wait, and the third case had been in progress so long I questioned the advisability of giving it, so did not give it to these three. It was difficult to decide what to do, yet those three got well. In another case I failed to send in a swab on a young man, and did not think it was diphtheria, but nevertheless gave antitoxin. He apparently got no results from the antitoxin, contrary to what has been said about antitoxin usually affecting a throat case, yet afterwards he was proved to be a carrier, as another case developed, according to the County Health Officer, which had been in contact with this one, and died.

DR. G. C. LINGENFELTER (Denver): I was very much pleased with Dr. Milligan's paper and want to emphasize all that Dr. Wylder said about not being afraid to give antitoxin too soon, or in too large a dose. You are not going to overdo it, but you may under do it. The remarks about smears are quite true-we do not always get accurate reports, and it is a wise method to be not quite satisfied if you have a negative report. There may have been some interference by the family in the way of having the child gargle, or swabbing the throat out with an antiseptic, shortly before the culture was taken and, hence, a negative report. Do not be satisfied with one negative. Take cultures over again and take them from the nose as well as from the throat.

DR. MILLIGAN (closing): I am very glad to have had such a generous discussion of this subject. Dr. Lathrop brought out the necessity of the Schick test on children in from three to six months after antitoxin has been given. That is a fine thing to do and should be done in all cases, but it is not practicable out in the rural districts. You have a great deal of difficulty to get these people to come in for their immunization, as transporta-

tion facilities are not good. They may live forty or fifty miles away and, when they come to the doctor's office, they do not like to have the office girl or the nurse take charge—they want the doctor. The public health nurses are always willing to cooperate with us. If we had more full-time health officers and nurses, we could arrange these patients in groups and meet them in the schools. In regard to the case that was rather virulent, where the doctor gave antitoxin without result, perhaps this patient was very susceptible to diphtheria and it worked faster than the antitoxin, so that the patient would require a much larger dose than is ordinarily given. As far as swabs are concerned, I am not in a position to say. I have received both positive and negative reports, and it has been my practice, when a case is suspicious, to go ahead and give antitoxin without paying much attention to the result of the culture.

#### BRAIN ABSCESS AND MENIN-GITIS FROM TRAUMA

(Fractured Skull)
Case Report

ERNEST B. THOMPSON, M. D. El Paso, Texas.

(Presented at Staff Meeting of Masonic Hospital May 13, 1932.)

The patient, male, age 15, was injured March 6, 1932, when he collided with an automobile while riding his motorcycle. Upon being brought to the hospital, unconscious, he was seen to be regaining consciousness and suffering from the following injuries: a split wound of the right temporal region about three inches long, with a depressed fracture of the temporal bone extending into and involving the orbit. Brain tissue was observed to be exuding from this wound which was very ragged and dirty. On the right knee there was a lacerated wound about eight inches long over the patella, extending down to the patella ligament, which was partially torn from its tibial attachment.

First aid was rendered. The wound in the head was cleansed of debris, drains were inserted and lightly sutured. The knee wound was cleansed, also, and sutured. Tetanus antitoxin was administered. As a considerable degree of surgical shock was present from the accident, nothing further was done, and he was put to bed, made warm, and given stimulants.

He reacted well and immediately began a most satisfactory convalescence. On the day following the accident his condition was markedly improved. Examination of the right eye by opthalmologist disclosed that there was fixation of the globe from the hemorrhage into the orbit, with hyperemia of the disk. The prognosis regarding vision in this eye was precarious.

The general condition of the patient improved daily and on April 2 he was up in a wheel chair, with no complaint, and anticipating going home in a few days. The eye had cleared up nicely and promised normal function, subsequently. The wound in the knee was completely healed, as was the head injury. Check-up x-rays showed the depressed fragments of the temporal bone, as at first, but as no symptoms from this had manifested themselves, and as he was convalescing so satisfactorily, it had not been deemed wise to instigate surgical procedure on the skull.

On the morning of April 2, as stated above, he was feeling good and without complaint. Suddenly an excrutiating headache seized him and vomiting appeared, with rising temperature. He was observed to be rolling restlessly in bed, with his face an ashen color, and his neck was seen to be very rigid. Immediately lumbar puncture was done, and the spinal fluid withdrawn was turbid and yellow, under considerable pressure. It was seen to contain much pus.

With the impression of brain abscess and meningitis from extension, immediate operation was decided upon and this was done under local anestheria. The old wound was opened and, upon incising the dura, a large amount of pus welled forth. Several pieces of bone were removed, also. Drains were inserted into the abscess cavity beneath the dura and the wound was closed.

Prompt improvement was noticed following this operative procedure. The headache was relieved and the patient's general condition was better. On the following day, his spinal fluid was clear and under no pressure. The stiffness of the neck was much less marked.

Then, after one day of improved condition, all of the former unfavorable symptoms again manifested themselves and the patient was seen to be in a grave state, growing worse all the while. And despite frequent injections of glucose intravenously, hypodermoclyses, infusions of glucose and saline intravenously, and transfusions of whole blood, his come slowly deepened and death ensued on March 6.

Cultures from the first two withdrawals of spinal fluid were negative, even though they contained much pus and were under pressure. Culture of the third withdrawal was positive for Staphylococcus rurcus. At time of operation cultures made from the pus from the brain abscess and from the bone sequestra were both positive for this same organism. Following the operation cultures of the spinal fluid were again positive for Staphylococcus aureus.

This case is interesting in that it shows no apparent damage from the loss of considerable brain tissue at time of accident, and the rapidity and suddenness with which the symptoms of a large brain abscess, with meningeal extension, may appear during the convalescence from the accident, one month later.

#### CASE REPORT

## FELIX P. MILLER, M. D. El Paso, Texas.

(Presented before the Staff Meeting of the Masonic Hospital, June 9, 1932.)

Patient, female, 10 years old, was brought to the hospital in a severe state of shock, with history of fall from a horse two hours previously. Patient was pale, skin cold and clammy. Abdomen was rigid and muscles hard. Patient complained of no nausea or vomiting. A diagnosis of injury to the abdominal viscera was made. Anterior, posterior, and lateral x-ray pictures were made of the spine, ribs and abdomen. No air bubbles were seen under the diaphragm. No injury to the ribs or spine was found. The left side of the pelvic bone apparently had been moved inward, outline was not symmetrical compared with the right, but no fracture or dislocation of the pubic bones was seen. A small amount of blood was noticed on the vulva, but there was no free bleeding from the urethra.

A small catheter was inserted into the urethra and a large amount of blood and urine obtained. The catheter was left in place. The abdomen was opened by a midline incision, extending from the umbilicus and going down over the pubic bone. After the fascia was incised, a hematoma was noticed at the lower angle of the wound. This portion of the abdominal wall was retracted and a large hematoma was found in the Retzius' space, extending from the reflex of the peritoneum well down under the pubic arch. This was removed by suction. Bleeding from the veins in this space was controlled by small gauze sponges, extending low in the wound. A rupture was found, extending along the anterior urethra and about an inch above the neck of the bladder. The catheter could be seen in the urethra. It was pulled well into the bladder wound. The urethra was closed over the catheter by means of No. 1 plain catgut, sutures going through all coats. The upper sutures were left long and used for retraction purposes in order to bring the lower wound into the urethra from beneath the pubic arch. The closure was continued downward to the end of the laceration in the urethra. The wound in the bladder was partially closed with chromic catgut with sutures and did not penetrate the bladder mucosa. This line of suture was enfolded and covered with No. 1 chromic catgut, placed after the fashion of Lambert sutures to enforce the first suture line. Mattress sutures were placed on each side, carried forward to attach the urethra to the tissues beneath the pubic arch. A purse string suture was passed in the upper end of the bladder wound. A suprapubic drain was fastened into the bladder. This tube was held firmly. A second purse-string suture, which penetrated the tube to fix it in place, was passed. Two penrose drains were inserted on either side of the urethra well down in the Retzius' space. Fascia was approximated with No. 2 chromic catgut, reinforced with silkworm sutures. Urethral catheter was sutured to the labia majora to prevent its being dislodged.

It was felt that the abdomen should be explored so a high right rectus incision was made. Free blood was found in the peritoneal cavity. There was a laceration through the peritoneal coat of the bladder about 3½ inches long. The muscular coats were not lacerated. All the abdominal organs were examined, no injury found. The blood was removed by suction and the wound was closed without drains. Patient was given saline by hypodermoclysis while on the operating room table.

Both the suprapubic and the catheter drains functioned nicely.

Patient reacted with a slight rise in temperature, first few postoperative days. Has been able to take fluids. Has had some discomfort from gas. There were no untoward symptoms.

The penrose drains were removed on the fifth postoperative day, and the suprapulic drain on the eleventh. The catheter was allowed to remain and functioned normally. The suprapulic wound closed by granulation with slight urinary drainage for several days.

#### CASE REPORT

R. J. STROUD, M. D. Tempe, Ariz.

(Presented before the Staff Meeting of the Good Samaritan Hospital, Phoenix, April 25, 1932.)

Case No. 13549: Male, aged 42, married, presented himself, January 12th of this year, complaining of feeling tired and saying that he had not felt well since early fall. He had not been able to stand hard work of any kind, and had some indefinite pains all over the body.

Examination revealed a man who had lost some weight, who was still in fairly good condition and well nourished. There was some pallor, but he said that it was more or less a normal condition. Outside of a somewhat tender area at the right kidney, nothing of importance was found. A urine test showed no abnormalities, and pus was looked for at the time.

The main thing in the patient's history was the fact of a double pneumonia 12 years ago, followed by an abscess of the right lung and spontaneous drainage through the bronchial tract. He was sick a long time but finally recovered. He has had no diseases, since, that relate even remotely to this present condition.

He did not report back, and, on Feb. 6th, I was called at night, his wife saying that she thought he had appendicitis. Examination revealed temperature of 102.6° and pulse of 80. The pain was rather higher than the appendix and came downwards from the right kidney region. Murphy sign was positive on the right side. The pain was not transmitted to the inner side of thigh, penis, or

testicle. The most tender spot was just under the twelfth rib. The urine showed a trace of albumin and was loaded with pus. Some blood cells were also present.

The course of the disease was rather stormy and a diagnosis of pyelitis was made. For the first four days, patient's temperature ranged from 102° to 104°, the evening temperatures always being higher. The pulse rate was between 76 and 92. He did a good deal of belching, but there was no vomiting. He was given amytal for pain and at times an opiate was necessary. After a week the pus in the urine had dropped very materially and his temperature began to come down until the 19th, when it was normal all day.

All of the time the pain in the right back was present, but left, except for a slightly uncomfortable feeling, the 18th and 19th; but the pulse had remained in the 90's, while his temperature dropped. The family was told that pus was probably outside the kidney and that an operation might have to be done. Heat, urinary antiseptics, water and alkalis were taken. Nonspecific proteins were given intramuscularly and infrared heat prescribed. On the 20th there was a slight trace of albumin in the urine, with a dark heavy output, slightly scanty, but no pus. The morning temperatures were normal, with an evening rise to 101°, until the morning of the 23rd. The patient looked and acted better, although during all of this time he was toxic enough to be more or less irrational, which could not be attributed to the amytal or occasional opiate. At the same time he would answer questions correctly and promptly, but the family described his symptoms as talking at random when not engaged in definite conversation. On the morning of the 23rd he had a sudden chill, temperature came up to 102.8°, with high pulse, and he looked very sick and toxic.. He was immediately sent to the hospital with a diagnosis of perinephritic abscess, pyelittis, and some bronchopneumonia. He was x-rayed that day for abscess around the kidney or possible kidney stones. The report was negative although, in the light of subsequent events, the gas bubble described could have been the outline of the abscess.

That night the patient suddenly became dyspneic, with shallow breathing, and was cold and in a clammy sweat, with inperceptible pulse. He looked as if he were going to die. I was on my way to see him when the night supervisor tried to call me about this sudden collapse. He was given 1700 cc. of saline solution reinforced with 3½ drachms of tr. digitalis and 60 grams of glucose. The pulse returned under my finger, while this was being given, to 120. His breath was stercoraceous at the beginning but cleared up by the next day.

The lungs showed signs rather hard to determine, being due to upward pressure of the pus, so pictures were ordered on the 25th with reference to the lungs, and showed high diaphragm. By inference this was due to pus pressure from below. An operation was advised, but before operating I asked

for consultation. Dr. Greer was called and advised a preliminary needling. When this was done, some 16 to 18 ounces of pus were withdrawn and the patient felt a great relief. His condition being as it was, the operation, done under novocaine, was that of following the needle, which had been left in position after drainage in his room, and going upward and inward with blunt instrument, spreading the tissue3 until the cavity was reached and a drain inserted. There was no pain or shock to the procedure and his condition improved rapidly. He was rational in all ways the next day, and said that he felt like himself more than at any time since being sick. From the 26th until March 3rd, he did well and, while thin and yellow from the prolonged toxemia was feeding himself and asking when he was to return home. On the 4th the drain tube was reinserted in the back, the old one having come out while le was being dressed. Early in the morning of the 5th, he had a sudden chill, with a rise of temperature to 103.8°, and the pulse and respiration took on the characteristic curve of a lobar pneumonia. Signs in the right lung were not much greater than when the abscess was present, but an x-ray was done to see if there were lung changes not found by stethoscope. X-ray revealed a mass in the hilus extending to the lower part of the lung. There is still some indefiniteness as to what it was. Dr. Watkins and I went over the thing and, as there was a possibility of fluid encapsulated or pus, needling was done and none found. One of the fine needles was broken off in the attempt, and is still there. Dr. Mills thinks it is between the pleura and ribs. Crosscutting following x-ray did not reveal it on the upper surface of the rib. This needle was a fine novocaine one, and its tendency to bend when meeting an obstruction has told me it is a poor thing to use for this procedure. On the 9th the temperature dropped very suddenly late in the day and next morning was subnormal when the patient had another collapse and again responded to saline solution intravenously. On the 11th a transfusion was done. It did not seem so necessary at this time, as he had regained a lot of strength, but it picked him up a bit more. On the 10th saline and glucose had given him a sharp reaction, so it was thought inadvisable to submit him to another possible reaction from transfusion. I will say that he was typed the first day he entered the hospital and a donor was found. A big reaction followed the transfusion. When the chill and rise of temperature began on the 5th, he was put on supportive treatment and inhalations as for pneumonia, immediately. As he had been getting some digitalis before, the heart rate soon dropped low and stayed there with a daily dose. When he had the cold clammy sweat of the crisis he was first wrapped up with hot water bottles. However, the whole back was exposed to infra-red for many hours, which dried him up, made him feel more comfortable, and brought his temperature up to normal. I think it beats hot water bottles and blankets. His recovery was rather slow and he has not yet returned to work. There is still a discharging sinus at the site of operation.

This case illustrates the need of consultation between the clinician and the roentgenologist when a picture is taken, with a full description to the x-ray man of what he may expect to find if the clinical signs denote pathology in any particular place. We should have saved this man two days of profound toxemia on the first picture if we had been more closely associated on the thing.

I am having smears made of the pus from the sinus, and also cultures, at the present time.

Without the history of a blow or any other focus, is it possible that the o'd lung abscess still carried some organisms that found their way to the kidney region?

## THE NEW MEXICO MEDICAL SOCIETY

(Continued from September Issue)
Afternoon Scientific Session

Dr. Earl D. McBride, (Oklahoma City, Okla.) opened the afternoon session with a paper on "Arthritis—Under the Light of Recent Research." Dr. McBride advised that the classification adopted by the American Committee for the Control of Rheumatism be studied and adopted by the profession; that the viewpoint of the clinician should be broad and his treatment thorough; that the sensitivity theory is rational and serologic therapy must be directed with an appreciation of allergic phenomena; and that the specific vaccine selected by means of the complement fixation text is reliable and deserves more general trial.

In discussion, Dr. R. W. Mendelson (Albuquerque, N. M.) agreed with Dr. McBride that each case is a personal equation and should be considered individually, and believed that the day of intravenous medication has passed.

Dr. V. E. Berchtold (Santa Fe, N. M.) stated that he was more or less interested in arthritis because he had suffered from it several times himself and he knew that specific vaccine in small doses adds a great deal to the comfort of the patient, compared with the intravenous injection of vaccines.

In closing, Dr. McBride explained results obtained from the vaccine treatment as dependent upon the attitude of the patient; that sometimes it is very slow and may take from three to six months to a year before improvement is shown. so the physician should endeavor to convince his patient that he will not and need not expect spectacular relief, but rather a slow and tedious process. If faithfully continued from six months to a year, tissue resistance will gradually be built up against the specific organism, and results will surely follow.

Dr. Hugh Jones (Los Angeles, Cal.) delivered an extemporaneous address, in connection with lantern

slides, showing various types of bone tumors, stressing particularly osteochondroma.

In discussion, Dr. C. W. Irish (Pasadena, Cal.) recalled the case of a girl of 16, who suffered a psychic trauma and developed psychotic symptoms very similar to those of dementia precox. A cystic tumor was finally taken care of and the psychotic symptoms cleared up.

Dr. William C. Menninger (Topeka, Kansas), in a paper on "The Neurotic Patient: The Ever Present Problem", summarized thus: "In the neuroses we are dealing with a very wide field of medicine for the reason that all of us have neurotic tendencies. When the pressure of the tendencies becomes too great, we have to compromise with these tendencies and we may develop a neurosis. We regard it as always a compromise between the neurotic tendencies and the situation, which is acceptable, but entirely unconscious in its workings, to the individual. These unconscious conflicts express themselves in bizarre ways, almost always with pain or distress but, because they find expression, which is fundamentally their aim, the individual is in a sense satisfied. His unconscious is satisfied and it does not care to make any change. So, despite the strivings of the conscious to get well, the more powerful unconscious does not desire to get well. In the final analysis, recovery is possible only when the intrapsychic conflicts are resolved."

Discussion was opened by Dr. A. B. Stewart (Las Vegas, N. M.), who commented upon statements made earlier in the day by cancer experts, that over 120,000 persons die eachy ear from certain types of cancer alone, and referred to the fact that neurologists and psychiatrists state there are over 75,000 commitments annually to public institutions for the control of the insane. "There are torn each day in the United States 7,000 infants, of which, under present statistics 270 will spend their last days in public institutions for the insane." This shows us our tremendous responsibility toward the class of individual we are more inclined to push away.

Dr. C. W. Irish (Pasadena, Cal.), complimented Dr. Menninger upon his general summary of the modern up-to-date treatment of neuroses, stating that the majority of medical men like to escape from the neurotic patient, who takes up more time and patience than any other type. He wondered if the profession and public realize the immense economic loss suffered in each community by the mental complex and estimated that it could bring about as much economic loss as the patient with a very decided organic lesion.

Dr. J. R. Earp (Santa Fe, N. M.) expressed the belief that it might be possible for the troublesome neurotic patient to become an entertaining subject to the busy doctor and, instead of being a nuisance, become an interesting hobby. He recommended a book by Hart, "The Psychology of Insanity", as very valuable in giving excellent ideas on the subject and telling how to handle this type. He sug-

gested that thought be given to the mental hygiene movement and the prevention of the development of neuroses, as it might be possible to prevent a good deal more successfully than cure, if more attention is paid to the beginning of neuroses while in the mental hygiene stage.

Dr. H. T. Jones (Los Angeles, Cal.) referred to the slight slur cast upon the general practitioners for the way in which they receive this class of patients and stated that at school most men had been taught never to diagnose from history, until everything else had been investigated. He asked what could be done if a woman comes into the office, throws her arms around the doctor's neck and commences to cry. If the doctor stops to listen, he is apt to be severely criticized, and, on the other hand, is also criticized if cruelty is necessary and is practiced.

In closing, Dr. Menninger expressed the belief that what to do with a lady when she throws her arms around your neck seemed entirely dependent upon the individual, but he felt it always safer to have a desk between himself and the patient—then, unless they have long arms, one is safe.

Dr. Curt von Wedel (Oklahoma City, Okla.), the next speaker, presented a very interesting paper, and demonstrated with lantern slides different phases of work in connection with "Plastic Surgery", touching principally upon that phase which has to do with the transplantation and shifting of skin. The Doctor asserted that "there is no sure way to success, but if fundamental rules are followed, skin transplantation today is highly practical. With the exception of the transplantation of very large full-thickness grafts on uneven surfaces, we today can almost promise success. Our failures are very few and far between and even with a transplant of a rather large area of full-thickness free graft, we seldom lose all the graft and are quite successful in the majority of cases."

In discussion, Dr. L. E. Griswold (Oklahoma City, Okla.) said in behalf of Dr. von Wedel's work that the profession in Oklahoma City were very proud of his success; that he has a number of cases all the time and his results are always excellent.

Dr. W. H. Woolston (Albuquerque) expressed his appreciation of Dr. von Wedel's interesting and instructive paper and commented that the work, which is extremely tedious, required much care and patience.

"Immunization and Treatment of Diphtheria" was the subject of the next speaker, Dr. C. F. Milligan (Clayton, N. M.), who asserted that "Diphtheria begins as a localized disease, usually in the throat, and later becomes more general in its action. The toxin is a slow poison, taking some weeks to produce all of its effects. From a clinical standpoint, diphtheria affects three organs principally, the kidneys, the heart, and the nervous system. The toxin probabily affects the entire organism but the organs mentioned are the ones that show the effects of the disease. The treatment followed at

the Alexandra Hospital, Montreal, Canada, is absolute physical rest, prohibiting as far as possible the movement of the limbs. If vomiting begins, all nourishment must be stopped for two or three days. Morphine is given if there is restlessness, but this rarely occurs unless the case is hopeless. Digitalis does harm by causing vomiting and increasing the tendency to heart-block. Other heart stimulants seem of little use. If the little patient can be tided over a few days, the natural processes of repair will effect a cure. The third clinical manifestation of the toxin is upon the nervous system, and usually makes its appearance in the general paralysis occurring about two weeks later. Walshe was the first to demonstrate that these parlayses followed any definite form. He has shown us how the first effect of the toxin on the nervous system was local, causing a paraylsis at the site of the lesion, then passing along the course of the nerves to the central nervous system, affecting first the local nerves, then the neighboring nuclei and then the general nervous system as a whole. The paralysis almost invariably culminates at the end of the sixth week. The treatment of this condition is largely rest and nutritious diet. The prognosis as regards life depends largely upon the invlovement of the diaphragm and the muscles of respiration. Fortunately, these muscles are the last involved and their paralysis is short lived. If one can keep the patient alive for a week, all symptoms will subside, for in this, as in all other toxic sequelae of diphtheria, recovery is absolute and complete in the process of time. If this clinical picture be a true one, it will be of benefit to us in managing our diphtheria cases: first, in beginning treatment early with sufficient antitoxin in the circulation; second, by testing the urine during the first week to determine the amount of toxins absorbed; third, by watching the heart during the first and second weeks; fourth, and finally, during the fifth week, in guiding the patient over the dangers of respiratory paralysis."

Discussion was opened by Dr. M. K. Wylder, (A.buquerque), who commented on the death rate due to this disease as a shame, when we know how to prevent diphtheria and that, if one has recently been exposed, a small shot of antitoxin will develop permanent immunity. In regard to antitoxin, many doctors feel they are not able to start with it until a postive diagnosis has been made, and they do not realize the importance of giving it early. It is not essential to await a culture—give antitoxin. It is far better to give it and not need it than to need it and not give it. With ordinary cases, give 10,000 units intravenously and, if given early, one will not have the complications Dr. Milligan described.

Dr. A. S. Lathrop (Santa Fe) stressed the importance of the Schick test on children from three to six months after antitoxin has been given, as figures show that only about 75 per cent are given immunity, the other 25 per cent being susceptible

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to diphtheria. "In cases we do not see until the fourth or fifth day, the importance of rest cannot be overemphasized, as those whose body tissues have already been poisoned by the toxins need considerably more rest than others."

Dr. J. R. Earp (Santa Fe) called attention to the fact that the New Mexico Bureau of Health has published helpful articles on public health questions weekly in sixteen English papers and all the Spanish papers, and is constantly stressing the importance of having children immunized. These items will be gladly furnished to any editor who can be persuaded to accept and publish them and, if your local newspapers desire them, please advise the Bureau. Dr. Earp also cautioned that, just because report from the laboratory on a culture might be negative, it should not be considered conclusive that the case was not one of diphtheria. He urged protection of the younger children and thought immunization, if started about the time of the first birthday, would prevent many deaths, as most of these occurred in children from one to three years old.

Dr. C. A. Miller (Las Cruces) recited an experience he had recently—seven cases in one family. There was only enough antitoxin on hand for treatment of four of the cases and, when a further supply was received, two of them were so much improved that he decided to wait and the third case had been in progress so long that he questioned the advisability of administration, so did not give it to the three, and all recovered. In another instance where he failed to send in a culture, not thinking the case one of diphtheria, the patient apparently showed no results from antitoxin which was given, yet was afterward proved to be a carrier.

Dr. G. C. Lingenfelter (Denver) emphasized Dr. Wylder's remarks in not being afraid to give antitoxin too soon, or in too large a dose, stating that there is more danger of underdoing than overdoing in this regard. He also advised against being satisfied that a case is negative simply because the laboratory report might be negative, suggesting that cultures be taken over again and from the nose as well as the throat.

In closing discussion, Dr. Milligan expressed his appreciation of same and agreed that it would be very advantageous if a Schick test could be made on children from three to six months after antitoxin had been given, but thought it not practicable in the rural districts, where it is very difficult to get the people to come in for their immunization, much less afterward, as transportation facilities are not good. They may live 40 or 50 miles away, so it is advantageous, if possible, to set some afterncon and send word far enough in advance to have them all come in at that time. Otherwise, if they come in at various times and do not catch the doctor in his office, they do not like the office girl or nurse to give the inoculations. If we had more full-time health officers and nurses, we could arrange these patients in groups and handle them without difficulty. In regard to the case that was rather virulent, where the doctor gave antitoxin without result, perhaps this patient was very susceptible to diphtheria and the toxin worked faster than the antitoxin, so that larger doses than those ordinarily given would be required.

Adjournment until 9:30 a. m., May 21, 1932.

#### Meeting of House of Delegates

A meeting of the House of Delegates was called at the close of the Scientific Session, there being present:

President, Dr. F. D. Vickers (Deming); Secre-(Continued on page 434)

#### PUBLIC HEALTH NOTES

J. ROSSLYN EARP, DR. P. H.
Director New Mexico State Bureau of Public
Health.

#### RELAPSING FEVER

We were honored recently by a visit from Dr. Emile Brumpt, professor of parasitology in the University of Paris and author of several well-known text books, including "Les Mycetomes," "Precis de parasitologie," "Spirochetoses," "Trypanosomes humaines, bilharzioses" and "Travaux pratiques de parasitologie."

Dr. Brumpt had been searching in the dust of New Mexico for the tick Ornithodoros which carries relapsing fever. He had not found a specimen, which does not, of course, prove that there are no specimens to be found. Relapsing fever (African tick fever) is common in old Mexico, has been found in Arizona1, Colorado2 and California.2 It was first traced to the tick Ornithodoros turicata in this country by Malcolm Graham in Texas.3 It has recently been reported in Nevada.4 Dr. Brumpt tells me that the chipmunk has been found to carry the infection in California, so confirming Graham's prediction, made in 1931, that there must be an animal reservoir of the disease. With recognized cases of relapsing fever on all our frontiers, we shall be exceedingly lucky if we escape without any cases in New Mexico. For this reason, relapsing fever will have been added to the list of notifiable diseases in this state by the time this article appears in print.

Psittacosis will be made a notifiable disease at the same time.

#### WHOOPING COUGH

Last year was a year of exceptional diphtheria incidence in New Mexico. Even so, there were fewer deaths from diphtheria than from whooping cough, which serves to emphasize the great importance of protecting infants from infection with B. pertussis.

Table I shows plainly that the first four years of life are those in which we are most to fear this disease. Thirty-one out of forty-seven deaths occurred in the

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Ages	Cases	Deaths
Under 1 yr.	26	31
1 "	32	11
2	23	2
3	25	1
4	34	2
<b>5-</b> 9	93	
10-14	15	
15-19	3	
20-24	1	
25-64	0	
65-69	1	
Age Unknown	15	
Т	otal 268	47

Who oping Cough Morbidity and Mortality by Age Groups—New Mexico, 1931.

first year of life. Twenty-two of these infants were less than six months old, a finding which does not support the theory of immunity during the earliest months. The fact that reported morbidity is lower than mortality in this age group might be an expression of the great virulence of the disease in this age group but is more probably an indication of incomplete reporting.

Fatality rates for the three most important contagious diseases are shown in Table II. When the fatality rates for New Mexico are compared with the following table of fatality rates given by Rosenau, one cannot avoid a suspicion that the number of

Table II

	Cases	Deaths	Reported Cases per death	Fatality rate
Whooping Cough	268	47	5.7	17.5+1.56
Diphtheria	372	45	8.3	12.1 + 1.56
Measles	1379	34	40.6	2.5+ .28

Fatality rates for Whooping Cough, Diphtheria and Measles—New Mexico, 1931

Table III

	Denmark	England	U.S.A.
Whooping Cough	1.4	1.3	0.7
Diphtheria	0.7	0.9	1.2
Measles	0.5	1.9	<b>0.6</b>

Fatality Rates (Rosenau)

cases notified is far short of the number occurring. This must not be taken as a reflection on the profession in New Mexico. There are many people in this state who do not consult a physician as often as they should.

#### WHOOPING COUGH VACCINES

Can we protect young children against infection? The history of whooping cough vaccines has been fraught with disappointment. Usually, when results have been statistically controlled, as in a recent report by Schowalter,5 they have given no encouragement. Still individual physicians, as Ellen M. Kent Hughes," remain convinced of its efficacy in their hands. There is, moreover, the controlled experiment of the epidemic in 1923 in the Faroe Islands, where the mortality among the vaccinated was only one-twelfth that among the non-vaccinated. Madsen, who obtains his vaccines from cultures grown on fresh blood medium, recommends three doses (subcutaneous or intramuscular), of 0.5 cc., 0.7 cc. and 1.0 cc., of a suspension containing 10,000,000 bacteria to the cubic centimeter.

Undoubtedly, ultimate success with this method depends upon the technic of preparation of the vaccine. Leslie and Gardner<sup>†</sup> killed their vaccine with 0.2 per cent formalin. Pierret<sup>§</sup> lays great stress on the doctrine that pertussis vaccine should not be killed by heat. He considers it important also that the vaccine should contain numerous strains of the organism and should be given in adequate dosage. He gives doses of 250 million bacteria, or even more, though he reduces his dose to one-half or one-quarter in children under three years of age.

While we are waiting for a perfected vaccine, it is of the first importance to isolate all well infants when whooping cough is about. Successful isolation of the well often depends upon successful diagnosis of the sick in the catarrhal stage, before the whoop develops. I find that some New Mexico physicians are unaware of the great aid they may have in diagnosis by getting the patient to cough upon suitable culture medium. The invisible droplets of an ordinary cough will develop into colonies of the Bordet-Gengou bacillus. Failure to find these colonies at the first attempt will occur in less than one-quarter of cases in the catarrhal stage. The state laboratory has assisted some physicians to make positive bacteriological diagnoses by supplying the medium.

#### NEW LABORATORY SERVICE

Miss Greenfield announces in the following paragraph an improvement in diphtheria diagnostic service which we hope will make less possible negative reports on cases that are clinically positive.

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The laboratory is planning a new method of handling diphtheria cultures, hoping that we shall obtain more sensitive results in the control of diphtheria. We shall send out tubes of Loeffler's culture medium sealed with cellophane caps. The cellophane cap will prevent the medium drying too rapidly. Culture medium so preserved should be in a suitable condition for use even after several months' storage. This stock of medium must be watched carefully, however, and when it shows perceptible drying should be returned to the laboratory, when a fresh supply will be forwarded. Please return all tubes not used, and do not divert laboratory tubes to other uses. The laboratory is running on a very small budget, and cooperation in avoiding even small losses is earnestly requested.

Miss Greenfield is also experimenting with capillary tubes for the collection of serum from primary chancres, in order that diagnosis of syphilis may be made in the early sero-negative stage by direct darkfield examination. Physicians interested in this new service should write to Miss Greenfield at the New Mexico Pubilc Health Laboratroy, University of New Mexico, Albuquerque.

#### REFERENCES

- 1. Bannister, K.: Relapsing fever, Southwestern Med. 14:581, (Dec.) 1930.
- 2. Varden, A. E.: Relapsing fever, Calif. and West. Med. 36:344 (May) 1932.
- 3. Graham, M.: Relapsing fever endemic in Texas: possibility of an animal reservoir. Texas State 7. of Med. 27:227 (July) 1931.
- 4. Medical News, J. A. M. A. 97:857 (Sept.) 19, 1931.
- 5. Schowalter, R. P.: The value of vaccine in the prevention of whooping cough, Am. J. of Diseases of Children, 39:544, 1930.
- 6. Hughes, E. M. K.: The use of vaccine in pertussis, Med. J. of Australia, 18:653 (Nov. 21) 1931.
- 7. Leslie, P.H .; and Gardner, A. D.: Jour. Hyg. 31:423, 1931.
- 8. Pierret, R: Present situation in France of biological prophylaxis and treatment in certain contagious diseases especially whooping cought and measles. Proc. Roy. Soc. Med. 25:1329 (June) 1932.

#### BOOK REVIEWS

PULMONARY TUBERCULOSIS. By Maurice Fishberg, M. D., Chief of the Tuberculosis Service, Montefiore Hospital, New York City, and of its Country Sanatorium for Incipient Tuberculosis. Fourth edition of two octave volumes, 1191 pages illus rated with 232 engravings and 8 plates. Cloth, \$15.00 net. Lea & Febiger, Philadelphia.

Volume I covers the etiology, pathogenesis, symptomatology, roentgenology and clinical forms. Volume II covers tuterculosis in children and the aged, tuberculosis of the pleura, diagnosis, complications and prognesis, medical, dietetic, climatic and in-

stitutional treatment, therapeutic pneumothorax, surgical treatment.

This standard work has been expanded, rewritten and revised to cover every recent advance in the subject. Over three hundred pages and over one hundred new illustrations, mostly roentgenograms, have been added. The text is clear, instructive and accurate. It presents the disease from every angle and is written in a style which compels attention and imports information. It is based on the latest and most authoritative knowledge. Every clinical aspect is stressed and roentgenology plays a much more important part than in previous editions. Every variation in the course of the disease is described and treatment, especially treatment in the home, is emphasized throughout, showing how it may be adapted to the individual case and conditions so as to make it more effective. This new fourth edition, like its predecessors, will be recognized as the most thorough and complete presentation of the subject.

Dr. Fishberg writes for both the general practitioner and the institutional worker. It is his belief that "incipient" does not invariably mean curable tuberculosis and, conversely, that "advanced" disease does not necessarily indicate a hopeless outlook. The work makes a sharp distinction between infection and disease and between tuberculosis and phthisis. It voices the conviction that sanatorium and climatic treatment are not the only methods of handling patients effectively and that careful home treatment under the direction of a qualified physician can produce immediate and ultimate results. The work reflects thirty consecutive years of experience with the tuberculosis problems of New York City.

Much of the material is entirely new, covering recent advances. There are new chapters on the medical phases of operative treatment, phrenicectomy, apicolysis, extrapleural thoracoplasty, oleothorax, etc. New sections are introduced covering the filtrable, ultramicroscopic and non-acid-fast types of tubercle bacilli, the etiological role of social and economic conditions, intraclavicular inflitrations, the differentiation and prognostic significance of apical as compared with subapical lesions, pulmonary cavities, tuberculous bacillemia, chronic and healed miliary tuberculosis, epituberculous infiltrations, the erythrocyte sedimentation test, the Wassermann test in the tunberculous, B.C.G. in prophylaxis, erythema nodosum, heliotherapy in pulmonary, intestinal and laryngeal tuberculosis. syphilis, asthma and hay fever in the tuberculous, the Gerson salt-free diet, insulin in tuberculous diabetics, chemotherapy, especially sanocrysin, the eugenic aspects of tuberculosis, etc. The exceedingly important work on the stages of tuberculosis initiated by the investigations of Ranke are considered in detail.

## Southwestern Medicine

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	BOARD OF MANAGERS ARIZONA STATE MEDICAL ASSOCIATION	
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	NEW MEXICO STATE MEDICAL SOCIETY  MEDICAL & SURGICAL ASSOCIATION OF THE SOUTHWEST	Roswell
DR. WILLIS W. WAITEDR. E. PAYNE PALMERDR. P. G. CORNISH, Jr	(Publication Committee)	El Paso Phoenix Albuquerque

#### THE SOUTHWESTERN MEETING

Albuquerque, December 8, 9 and 10

The program of the Eighteenth Annual Session of The Medical and Surgical Association of the Southwest, under the capable chairmanship of Dr. W. A. Gekler, of Albuquerque, is rapidly taking form. The other members of the Committee are Drs. David M. Davis of Phoenix, C. A. Thomas of Tucson, S. A. Schuster of El Paso, and M. K. Wylder of Albuquerque. The scientific program will be made up almost exclusively by members of the Association, thus coming back to the original purpose of the organization, which was to present, by papers and clinics, the scientific and medical work of the profession of the southwest.

The completed program will be published in the November issue of this journal, which will issue about November 15th. Among the papers already announced are the following:

Dr. W. P. Holbrook, Tucson, Ariz.: "Therapy in Chronic Rheumatic Diseases."

Dr. J. J. Beatty, Tucson, Ariz.: "What Can We Do with the Far Advanced Case of Tuberculosis?"

Dr. C. S. Kibler, Tucson, Ariz.: "Pulmonary Tuberculosis with Acute Onset."

Dr. Meade Clyne, Tucson, Ariz.: "Scalieotomy in Treatment of Tuberculosis."

Dr. M. C. Comer, Tucson, Ariz.: "Conservatism vs. So-called Radicalism."

Drs. John W. and Zedud M. Flinn, Albuquerque, N. M.: "The Tissue Reactions to the Tubercle Bacillus,"

Dr. M. K. Wylder, Albuquerque, N. M.: "Autumn Diarrhea in Children."

Dr. H. M. Purcell, Phoenix, Ariz: "Trichomonas Infection."

Dr. W. Warner Watkins, Phoenix, Ariz.: "The

Natural History of Gastric Ulcer as Shown by X-ray."

Dr. Louis B. Baldwin, Phoenix, Ariz.: "Some Clinical Aspects of Essential Hypertension."

Dr. Henry L. Franklin, Phoenix, Ariz.: "Refractive Errors in Their Relation to General Medicine."

Dr. J. H. Patterson, Phoenix, Ariz.: "The Cervix and Some of Its Problems."

Dr. Wm. L. Reid, Phoenix, Ariz.: "Symptoms of Gall Bladder Disease and Operative Findings."

Dr. W. P. Sherrill, Phoenix, Ariz.: "Tuberculosis from the Standpoint of the Pediatrician."

Dr. Palmer Dysart, Phoenix, Ariz.: "Presentation of a Transfusion Apparatus."

Dr. David M. Davis, Phoenix, Ariz.: "Radium Treatment of Carcinoma of the Prostate and Bladder."

Dr. Victor Randolph, Phoenix, Ariz.: "Intrapleural Pneumolysis, with Special Reference to Bilateral Pneumothorax in the Treatment of Pulmonary Tuberculosis."

Dr. Thomas W. Woodman, Phoenix: (Title to be announced).

Dr. J. H. Gambrell, El Paso: "Carcinoma of the Thyroid with Case Report."

Dr. Kelvin D. Lynch, El Paso: "Some Observations on Transurethral Prostatic Resection."

Dr. N. H. Keller, El Paso: "Physiology of Nephritis."

Drs. Stephen A. and Frank P. Schuster, El Paso: "Some Observations on Cataract."

Dr. R. B. Homan, Sr., El Paso: "Lung Abscess." The hotel headquarters will be at the Franciscan. Other details of the program, such as clinics, entertainment and registration will be announced next month.

OCTOBER, 1932 433

## THE INITIATIVE ON THE ARIZONA INDUSTRIAL COMMISSION

The initiated measure to abolish the Arizona Industrial Commission is a matter which should concern the entire medical profession of that state. It is difficult to see how any impartially minded physician or surgeon in the state can support this measure. The policy of the Commission has always been one of cordiality and fairness to the medical practitioner. They made a poor start in the outset of their organization when, under the guidance of a legal advisor trained in California, a fee schedule similar to the one in that state was announced. However, when these fees were protested by the Arizona State Medical Association, they were invited by the Commission to write their own schedule. A special meeting of the Association was called, met in Phoenix, and worked out the present schedule; although this was more generous than can be found in any other state, it was adopted by the Commission. At the same time, the Association was requested by the Commission to appoint an advisory committee to confer with the Commission over any differences which might arise between that body and individual practitioners. Such a committee was appointed but failed to function when called on, so that the Commission was forced to work out its medical problems the best way it could.

The difficulties and frictions encountered in Arizona have not been any different from those found elsewhere, and they center about cases in which the Commission acts as insurer. Naturally, in that capaccry, they have been directly interested in the type of service rendered injured workmen, and in the fees charged for those services. Where they have found the service poor and the charges high, the Commission has not hesitated to express itself, and this has created enemies in the ranks of the medical profession. Similar situations are found everywhere Industrial Commissions operate. They arise out of the more or less human desire to make insurance cases as remunerative as possible, even at the cost of the desideratum devoutly sought by the Commission, which is to return the injured workman to work as quickly as possible and with as little cost as possible. Where these two ideas clash, somebody is bound to be dissatisfied, but the remedy for this is not destruction of the whole machinery, but cooperation in its operation.

The disaffection in Arizona has been seized upon by individuals whose personal interest will be best served by abolishing the Industrial Commission,

thereby making an "open season" of the injured workmen and their employees for the benefit of whoever can garner the most personal profit out of their misfortunes. Attempt is being made by these individuals to enlist the sympathy of members of the medical group in support of this initiative, although employees, employers, and the general medical profession of the state are opposed to such a destructive measure. Of course, there are occasional workmen who are not satisfied with the awards given, but, on the whole, the Commission has been not only fair but generous in these awards. If there are personal differences between individual members of the medical profession and the Commission, these should not be allowed to take precedence over the decision of the state medical organization that the Industrial Commission should be supported in its efforts to serve the workmen of the state, and this initiated measure should NOT be supported.

#### DR. R. J. STROUD, REPUBLICAN CHAIRMAN

Not content with furnishing the Democratic party its candidate for governor, Tempe, the little college town on the south bank of Salt River, has also contributed the Chairman of the Republican Central Committee of Arizona, in the person of Dr. R. J. Stroud. With an honorable record of service in the medical ranks of Arizona, Dr. Stroud is entering upon his new duties in the political arena with his customary ability. Among the services rendered the medical profession are included those as president of the Maricopa County Medical Society, national legislative committeeman of the State Association, as well as serving as secretary of the State Board of Health under Governor Phillips. It is interesting to note that our Republican presidents seem to have a preference for physicians in their cabinets. The Secretary of the Department of the Interior under President Coolidge and President Hoover has, in each instance, been a physician and an ex-president of the American Medical Association. This office was filled under President Coolidge by Dr. Hubert Work and the same place is now held by Dr. Ray Lyman Wilbur. Dr. Stroud's experience as an abdominal surgeon might qualify him for the same position. (Sic.)

Physicians of Arizona have been willing to give time to public service, whenever called upon, and the roster of those who have so served would be a long one. Dr. Stroud has given excellent service in several minor capacities and we know that he will bring to his new responsibility his characteristic vigor and good judgment.

## PERCY GILLETTE CORNISH, SR. (Albuquerque)

In the passing of Dr. P. G. Cornish, Sr., another of the noted pioneers of the profession in the Southwest passed from the scene of this world, leaving a host of friends in all walks to life, to join with his sorrowing family in their mourning.

His death occurred on September 28th in the Good Samaritan Hospital in Los Angeles, where he had undergone an operation. Dr. P. G. Cornish, Jr., arrived by plane from Albuquerque in time to be with his father several hours before the end. The body was brought to Albuquerque for last honors by the community and various organizations of which he was an active member.

Dr. Cornish was born in 1857, a native of Alabama. He received his earlier education in Kentucky and graduated in medicine from Jefferson Medical College in 1885. He moved to Arizona in the early nincties, being located for a time at Flagstaff. He married in Prescott during this period, his wife being from the Coffin family, still pioneers in Phoenix; she died in February of this year. Dr Cornish moved to Albuquerque in 1897, and thrroughout his long and honorable carcer in New Mexico endeared himself to the profession of the Southwest and to the citizens generally. For years he was chief surgeon for the Santa Fe Railroad in New Mexico. He has served as president of the New Mexico Medical Society and of the Medical and Surgical Association of the Southwest; he was a Fellow of the American College of Surgeons and of the American Medical Association. He was a charter member of the Albuquerque Chamber of Commerce, has been eminent commander of the Knights Templar, member of the Shrine, of the Elks, and a faithful member of the Presbyterian Church, the Rotary Club and other organizations. He is survived by his son, Dr. P. G. Cornish, Jr., of Albuquerque, one brother who resides on the family homestead in Alabama, and the members of the family of his wife.

#### THE NEW MEXICO MEDICAL SOCIETY

(Continued from page 429)

tary-Treasurer, Dr. L. B. Cohenour (Albuquerque); and the following members: C. F. Milligan (Clayton); C. A. Miller (Las Cruces); G. W. Jones (Clovis); W. T. Joyner (Roswell); H. A. Ingalls (Roswell); M. K. Wylder (Albuquerque); W. H. Woolston (Albuquerque); H. A. Miller (Clovis); R. O. Brown (Santa Fe).

Minutes of the meeting of May 19, 1932, were

read and, no objections arising, were ordered approved as read.

The Committee on Necrology submitted its report, as follows: "Resolved: That the New Mexico Medical Society notes with regret the passing from this life of the following: Dr. Jesse G. Holmes, Alamogordo; Dr. Daniel H. Lewis, Albuquerque; Dr. E. D. McKinley, Alamogordo; Dr. J. O. Hatcher, Deming.

#### (Signed) M. K. WYLDER, ROBERT O. BROWN, F. H. CRAIL."

Dr. W. T. Joyner (Roswell) discussed the importance and necessity for the adoption of an amendment to the By-Laws whereby the Council would be empowered to look out for the matter of dealing with public health and legislation insofar as it might pertain to the best interests of the medical profession and people. He urged this because of the fact that, before another State meeting will be held, there will be a Legislative session, stating that in the past years the Society has done little toward legislative matters pertaining to public health. Action should be taken looking toward legislation, perhaps not so much in promoting legislation, as in preventing vicious legislation from being enacted. Since the osteopaths and chiropractors have become legalized in this State, they have become militant and are asking for more and more each year. Under our present system, the By-Laws provide for a Committee on Public Health and Legislation, which committee is appointed by the President on recommendation of the county societies. This has not been a practicable method by which to deal with the situation, as the committee is shifted around each year and it is difficult to get the members together for action which may be desired or necessary at any time. The Council, as the executive body of the Society in the interim between meetings, should have this duty devolve upon it, as it is usually composed of members who have belonged to the Society for years, who attend the meetings regularly (most of them being ex-Presidents), it seems best fitted to look after these important matters:

After considerable discussion, Dr. W. T. Joyner (Roswell), made motion that Section 3 of Chapter 8 of the By-Laws be amended. This Section now reads: "The Committee on Public Policy and Legislation shall consist of a member of each component Society, appointed by the President on the advice of and confirmed by the Council, and the President and Secretary-Treasurer. Under direction of the House of Delegates, it shall represent the Society in securing and enforcing legislation in the interest of public health and of scientifie medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall strive to organize professional influence so as to promote the general good of the community in local, state, and national af-

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fairs and elections." The proposed amendment would strike out the words "it shall represent the Society", and in their place substitute the words, 'it shall assist the Council."

Further, to Chapter 7, which provides the duties of the Council, should be added a Section to be known as "Section 6", to read: "The Council shall represent the Society in securing and enforcing legislation in the interest of public health and scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall strive to organize professional influence so as to promote the general good of the community in local, state and national affairs, and elections."

Dr. Joyner stated that there would still be the Public Health Committee to assist the Council, and it would be the duty of the Council to take up all matters pertaining to public health and legislation which might arise at any time between meetings. He announced that, if the proposed amendments were adopted, he intended to offer the following Resolution: "Resolved, That the sum of Five Hundred Dollars (\$500.00), is hereby appropriated for the use of the Council, to be expended as it may be deemed necessary during the ensuing twelve months in the interest of legislation pertaining to public health and scientific medicine, and pay the expenses of holding special meetings in the interests of the Society, and it is hereby requested that the Council hold at least one special meeting during the 1933 session of the New Mexico Legislature, to consider such matters and take such action as it may deem necessary."

The motion was seconded by Dr. R. O. Brown (Santa Fe) but, under the rules, had to be held over until next meeting.

Election of officers followed:

President-Elect: Dr. H. A. Ingalls (Roswell) was nominated by Dr. M. K. Wylder, seconded by Dr. W. T. Joyner. Motion that nominations be closed was seconded and unanimously carried. Dr. Ingalls was declared elected.

Vice-President: C. F. Milligan (Clayton) was nominated by Dr. W. T. Joyner, seconded by Dr. W. H. Woolston. Motion that nominations be closed was seconded and unanimously carried. Dr. Milligan was declared elected.

Secretary-Treasurer: L. B. Cohenour (Albuquerque) was nominated by Dr. H. A. Ingalls, seconded by Dr. M. K. Wylder. Motion that nominations be closed was seconded and unanimously carried. Dr. Cohenour was declared elected.

Councillors for Three Years to replace Dr. C. B. Elliott (Raton) and R. O. Brown (Santa Fe): Motion was made by Dr. L. B. Cohenour that Drs. Elliott and Brown be reelected to serve for three years more, seconded by Dr. H. A. Ingalls. Motion that nominations be closed was seconded and unanimously carried. Drs. C. B. Elliott and R. O. Brown were declared reelected.

De'egate to A. M. A. Meeting for 1933 and 1934: Dr. H. A. Miller (Clovis) was nominated by Dr. M. K. Wylder, seconded by Dr. H. A. Ingalls. After discussion as to the advisability of selecting different men for this office annually, or continuing the same incumbent because of his familiarity with procedure, motion that nominations be closed was seconded and carried. Dr. Miller was declared elected.

Alternate: Dr. J. W. Board (Clovis) was nominated by Dr. W. T. Joyner, seconded by Dr. H. A. Ingalls. Motion that nominations be closed was seconded and unanimously carried. Dr. Board was declared elected.

Meeting Place for 1933: Dr. W. T. Joyner extended a cordial invitation for the Society to hold its 1933 meeting at Roswell. The Secretary read telegrams from the Roswell Chamber of Commerce urging that the Society meet at that place in 1933, and also from the Carlsbad Chamber of Commerce, urging that Carlsbad be selected as the meeting place. Motion by Dr. M. K. Wylder that the 1933 meeting be held at Roswell, was seconded by Dr. Cohenour and carried.

Dr. H. A. Ingalls (Roswell) made motion that the Secretary be instructed to notify the Chamber of Commerce at Carlsbad, of the appreciation of the Society of their invitation, which it regretted could not be accepted this year because Carlsbad had been the meeting-place since Roswell and therefore it seemed Roswell should have the next meeting. Seconded by Dr. W. T. Joyner and carried.

Motion by Dr. W. T. Joyner that the meeting be adjourned until 8:30 a. m., May 21, was seconded and carried.

#### SATURDAY, MAY 21, 1932 House of Delegates

The meeting was called to order at 9 a.m., by the President, Dr. F. D. Vickers. There were present: Dr. F. D. Vickers (Deming); Dr. L. B. Cohenour (Albuquerque); Dr. C. F. Milligan (Clayton); Dr. C. A. Miller 'Las Cruces); Dr. H. A. Ingalls (Roswell); Dr. W. T. Joyner (Roswell); Dr. H. A. Miller (Clovis).

Minutes of the previous meeting were read by the Secretary and, no objection arising, were approved as read.

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Dr. W. T. Joyner (Roswell) requested that the Secretary read the proposed Amendments to the By-Laws, as brought before the meeting yesterday. After the reading, motion was made by Dr. H. A. Ingalls (Roswell), that the proposed Amendments as read by the Secretary, be adopted, which was seconded by Dr. H. A. Miller (Clovis) and carried.

Dr. W. T. Joyner (Roswell) offerel "Resolution, That the sum of Five Hundred Dollars (\$500.00) be appropriated for the use of the Council, to be expended as it may be deemed necessary during the ensuing twelve months in the interest of legislation pertaining to public health and scientific medicine, and pay the expenses of holding special meetings in the interests of the Society, and it is hereby requested that the Council hold at least one special meeting during the 1933 session of the New Mexico Legislature, to consider such matters and take such action as it may deem necessary."

Motion was made by Dr. H. A. Miller (Clovis) that Resolution as offered by Dr. Joyner to appropriate \$500 for use of the Council as stated, be adopted. Seconded by Dr. H. A. Ingalls, Roswell, and carried.

Dr. W. T. Joyner (Roswell) made motion that the Secretary be instructed to have printed as many copies as he might deem necessary of the Constitution and By-Laws, as amended, and that each member of the Society be furnished with a copy. Seconded by Dr. C. A. Miller (Las Cruces) and carried.

No further business arising, motion to adjourn was carried, with adjournment at 9:15 a.m.

Meeting of Council

Called to order by the President, Dr. F. D. Vickers, at 9:15 a.m., there were present in addition to Dr. Vickers, the following: Dr. L. B. Cohenour (Albuquerque); Dr. W. T. Joyner (Roswell); Dr. H. A. Miller (Clovis), and Dr. R. O. Brown (Santa Fe.

After discussion of the Amendments to the By-Laws, Dr. H. A. Miller made motion that the President and Secretary-Treasurer of the Society, act as President and Secretary of the Council and call such meetings as may be deemed necessary prior to the meeting of the New Mexico Legislature. Seconded by Dr. Joyner and carried.

Motion was then made by Dr. W. T. Joyner that the President of the Council call a special meeting at Albuquerque during the meeting of the Southwestern Medical and Surgical Association (probably sometime in November or early December), for the purpose of working out a program for the ensuing year along legislative or other lines. Seconded by Dr. R. O. Brown and carried.

Dr. W. T. Joyner (Roswell) made motion that the Secretary be instructed to write to each county society secretary in regard to ascertaining the views of prospective candidates for Legislature, and whether they would be favorable or otherwise to medical legislation, if elected. Seconded by Dr. H. A. Miller and carried.

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No further business arising, motion to adjourn was entertained and carried. Adjournment 9:30 a.m.

#### Scientific Session

Dr. R. A. Duncan (Amarillo, Texas) presented his credentials as Fraternal Delegate from the State of Texas, and issued a cordial invitation for members to attend the Texas State meeting next year.

Dr. James W. Hendrick (Amarillo, Texas) presented a paper on "Diagnosis and Management of Adenomatous Goiter", in which he pointed out that there are two types of adenomata: the fetal type, which is the less common of the two, and the socalled colloid adenomata. Clute states that 90 per cent of the thyroid cancers have their origin in this type of tumor, and that at least 4 per cent of the fetal adenomas become malignant. The colloid a lenomatous goiter occurs more frequently in the sti-called goiter be'ts, but sporadic cases are observed throughout the United States. This form of goiter, once present, is s'rictly a surgical condition. as it is not amenable to medical treatment. Its course is constant and progressive, and does not run in cycles like that of the exophthalmic. About 60 per cent of the adenomas become toxic in middle life. Influenza, tonsillitis, quinsy, bronchitis, physical strain, mental shook, and pregnancy, may act as predisposing factors of toxicity in many cases. Whereas, in other cases, toxicity develops without any apparent stimulating factors.

Discussion was opened by Dr. W. S. Lemon (Rochester, Minn.), who advised surgical treatment in all cases of adenomatous goiter in which the adenomas are at least an inch in diameter. If there is a single adenoma, circumstances may be such as to make its removal advisable at any age; if multiple adenomas are present, it is usually advisable to wait until the patient is over twenty-five years of age. Multiple adenomas are, in all probability, better removed in all patients over forty years of age. They apparently do not begin to hyperfunction until after an average of fourteen years has passed following discovery.

Dr. F. D. Vickers (Deming) asked in regard to the value of x-ray treatment, especially in the case of small adenomas that are highly secretive.

In closing, Dr. Hendrick advised that the time for removal of non-toxic adenomas had moved up to around the age of thirty, as, if removed too early, very small adenomas might be overlooked, or new adenoma might develop and later give trouble. X-ray treatment he did not advise in any type of adenoma.

Dr. R. A. Duncan (Amarillo, Texas), in a paper on "Brain Abscess from the Otologist's Viewpoint", called attention to the status of brain abscesses as seen by the average physician, presenting cases taken from the records of Saint Anthony Hospital and Northwestern Texas Hospital, Amarillo, Texas, which were seen and diagnosed by many different types of practitioners, the records indicating two

things: (1) the inclination to procrastination on the part of the patients and the hopelessness of the condition during the late stages; (2) the advantage that could be had from having trained neurologists and brain surgeons in all hospitals. In the cases recorded, Dr. Duncan stated, the diagnosis was made too late to be of any benefit to the patient. "They show the value of early diagnosis if surgery is to do anything other than hasten the end. Someone has very aptly said that, 'when a diagnosis is made of brain abscess, it is too late to operate.' The symptoms must be interpreted early if the patients are to be benefited. The classical symptoms cannot be waited for. When they appear, the case has progressed to a dangerous stage. It is important that we keep in our minds the potential danger of a chronic discharging ear, so that, when there is any diviation from its normal course, such as headache, vomiting, loss of smell, muscular weakness and other symptoms of this type, we shall be on our guard. Early diagnosis and prompt treatment are essential if we are to aid the patient."

In discussion, Dr. J. P. Kanes (Santa Fe) comp'imented Dr. Duncan on his intensive study and portrayal of the cases cited, referring to Sir James Mackenzie and the manner in which he studied the heart, as a comparison.

Dr. Duncan, in closing, thanked the Society for the opportunity of presenting his paper and in-

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1430 Tulane Avenue New Orleans, La. timated that he, like Mackenzie, was a Scotchman, but could appreciate Scotch jokes nevertheless.

Dr. E. B. McBride issued a very cordial invitation to members to attend a fall clinic to be given at Oklahoma City, the first week in November, when an excellent program will be presented.

Motion pictures on spinal anesthesia followed the conclusion of the scientific program.

#### General Session

A meeting of the general session was held immediately following adjournment of the scientific session, President Vickers presiding. After call to order, the Secretary's report, including a resume of the proceedings of the House of Delegates (which has been published in full in the minutes of the meeting), was read and adopted.

Dr. C. F. Milligan (Clayton) proposed a Resolution that thanks be extended to the Governor of New Mexico, the Mayor of Santa Fe, the Santa Fe County Medical Society, the Program Committee, the Entertainment Committee, the Committee on Arrangements, Director and Mrs. Nusbaum of the Laboratory of Anthropology, and, in addition, the management of the La Fonda Hotel, the members of the press, the Ladies' Auxiliary, and the management of the Lensic Theatre, for the very cordial hospitalities extended and courtesies shown the members and visitors, which assured success for the meeting. The motion was seconded and carried.

Dr. W. T. Joyner (Roswell) made motion that the President appoint Fraternal Delegates to attend the annual meetings of the Colorado, Texas, and Arizona State Societies. Seconded by Dr. R. A. Miller (Clovis) and carried.

The President announced as such Fraternal Delegates:

To Texas State Meeting, Dr. H. A. Ingalls, Roswell.

To Colorado State Meeting, Dr. T. P. Martin,

To Arizona State Meeting, Dr. G. T. Colvard, Deming.

In closing the session, President Vickers thanked members for their presence and interest manifested in the proceedings.

Adjournment sine die at 12:15 p. m.

#### BOOK REVIEWS

COURTS AND DOCTORS, by Lloyd Paul Stryker; The MacMillan Co., New York 1932. \$2.00.

This is a book which every physician should read. It is written by a lawyer who has had a great deal of experience in the trying of malpractice suits in the New York state. He for years represented the New York State Medical Society.

The book contains 236 pages and is divided into seven parts. The first defines the practice of medicine; the second deals with relationship of patient and physician, especially emphasizing confidential communications; part three, with the action for malpractice; four, the defenses to actions for malpractice; five, with expert testimony; six, the doctor



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on the witness stand; and, seven, the doctor and the criminal law.

In part three the author goes into the detail of what is apt to constitute malpractice and what is necessary to prove when establishing a suit for malpractice. He says that it is practically always estential, in order to have a successful suit for malpractice, to have expert testimony to the effect that the defendant did not use reasonable care and reasonable knowledge compared with others' practice in his community. There are exceptions to the expert testimony rule. It is possible for a patient to acquire an x-ray burn and be able to exhibit the burn to the jury and establish that it came from use of the x-ray. This might take the place of an expert in such cases.

The book is well written. The introduction is a splendid piece of literature and is well worth frequent perusal.

On page 15 of the introduction, 5th line from the bottom, the author says that Dr. Morton had been experimenting for many years with sulphuric acid, and he must mean sulphuric ether. On page 88, in the 5th line of the second paragraph, he says that "Dr. Myers removed the right kidney and the bowel"; evidently he has not said just what he means. On page 93, top line, he uses the word anesthesia when he really means anesthetic. Again, on page 112, last paragraph, and page 113, first paragraph, he uses anesthesia when he really means anesthetic. On page 155, 7th line from the top, he uses words "an expert" when he should have said experts.

On page 114 there is a paragraph which every physician should memorize. It is one of eleven suggestions to avoid malpractice suits. It reads as follows: "Be tactful and just to your fellow practitioners. Do not indulge in needless criticism. The fact that you form or act upon a conclusion different from that of your predecessor affords in and of itself no just basis for condemning his judgment or his action. Careless remarks, ofttimes unjust, have not infrequently led to litigation."

This is a day when everybody is looking for easy money or any kind of money and in which there is an epidemic of malpractice suits, attempts to filch doctors.

May every physician read this little book.

O. H. B.

COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION; edited by Mrs. Maul H. Mellish-Wilson and Richard M. Hewitt, B. A., M. A., M. D.; Volume XXIII 1931; Published, May 1932; Philadelphia and London; W. B. Saunders Company.

The 1931 edition contains 1231 pages. There are about 265 to 270 contributors and about 910 separate articles. The subject matter runs the gamut of scientific medicine and it is undoubtedly the outstanding yearly collection of contributions. One who has to keep up with the progress of medicine must have access to these volumes. There are so many interesting articles that it is very difficult to select any one to be commented upon.

The one which is outstanding in the mind of the reviewer is entitled "Studies of the Physiology of the Liver. XXII. The van den Bergh Reaction in the Jaundice Following Complete Removal of the Liver". The article gives the theories of the van den Bergh reaction and a conception of it that I had been unable to gather from any other source. Bilirubin probably undergoes a change as it passes through the polygonal cells of the liver, and this change is responsible for a quick reaction to the diazo reagent whereas before the reaction is slow. Thus we have the direct and the indirect reactions. It is an interesting thing that the kidney cells of the dog seem to have the same effect on bilirubin as do the liver cells of man. The broken down hemoglobin is transfor.ned probably into bilirubin in the reticulo-endethelial system.

Some of the most interesting articles in the volume deal with the subject of medicine in a more or less general way. The writers of these are mainly Drs. W. J. Mayo, C. H. Mayo, Judd, Wilson and Walters.

One almost sheds a tear when reading Wm. J.'s statement "my brother, Chas. H. Mayo is not only the best clinical surgeon from the point of the pa-

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tient that I have ever known, but he has that essential attribute of the true gentleman, consideration for others". He said this on the anniversary of his 70th birthday when speaking of the delightful association he had had with his brother these many years. He said that they had a common pocket book in which each has wanted the other to have the greater share.

O. H. B.

SURGICAL PATHOLOGY OF THE FEMALE GENERATIVE ORGANS, By Arthur E. Hertzler, M. D.; Surgeon to the Agnes Hertzler Memorial Hospital, Halstead, Kansas; Professor of Surgery, University of Kansas; 285 Illustrations; J. B. Lippincott Company; Philadelphia, Montreal and London.

Those who are acquainted with Dr. Hertzler need no words of mine to give them a concept of what this volume contains. It is a result of his large experience. In his preface he says, "I have relied on that master critic in anatomic diagnosis, the after-course, to check the histologic diagnosis".

It is such works as this, the experiences of well-trained individuals, which will advance and further perfect the various divisions of the science of medicine. Every man doing general surgery and every gynecologist should own this book.

There are three parts to the book, to-wit: Diseases of the external genitalia in the female; Diseases of the tubes and ovaries; Diseases of the uterus. There are two chapters in the first part, four chapters in the second and nine in the third.

He seems to have practically covered every possible pathological development of the female generative organs.

Hertzler has a direct way of saying things so that his meaning is clear and usually is easy to understand. The sentences are ordinarily short. His language is impressive. For instance on page 71 he says, "It has always been a mystery to me why surgeons should regard the castration of the human female with indifference, even derision. Even now women come to the clinic in droves who have had their ovaries removed and were wrecked by it."

On the next page he says, "Formerly it was the surgeons who castrated their patients, now it is the roentgenologists. I will have no more of it. There is not a single lesion described in this chapter which can be maintained as pathologic in a degree that justifies removal and none in which the removal of the ovary but makes the last state of the patient worse than the first".

In places his language becomes a bit satirical but it is Hertzlerian and could not be otherwise. The publishers have done their work almost, if not quite, to perfection. The index appears to be well arranged. Let these reports, for such they are, of Hertzler's, be a stimulus to others who have had extensive experience coupled with original thinking.

O. H. B.

MEDICAL CLINICS OF NORTH AMERICA: (Issued serially, one number every other month); Volume 16, Number 1; (Philadelphia Number—July 1932); Octavo of 290 pages with 75 illustrations; Per Clinic year, July 1932 to May 1933, Paper, \$12.00; Cloth, \$16.00 net.; Philadelphia and London; W. B. Saunders Company, 1932.

There are a number of articles in this issue which practically every physician would wish to read in their entirety; Psychological Considerations in Schizophrenia, by Edward A. Strecker; Can We Prevent Heart Disease, by James E. Talley; Injury to the Spinal Cord, by eGorge Wilson; Chroniv Infection, by Martin E. Rehfuss; Prevention of Coronary Occlusion, by Wm. D. Stroud; Alkalosis and Duodenal Ulcer, by H. L. Bockus and J. Bank; Purpura Hemorrhagics, by Harold W. Jones and Leandro M. Tocantins are among the more interesting ones.

Rehfuss in his article on chronic infection has been studying bacteria, isolated in patients, for their grade of pathogenicity. In order to determine whether a certain streptococcus is producing pathologic changes he determines the evidence of local reaction for the presence of organisms where they should not be, the skin reactions to the vaccines, the complement fixation test, and the pathogen selectivity test.



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He is inclined to the opinion that the intradermal tests are of definite value in deciding upon the likelihood of a streptococcus being to blame for trouble. He points out that two organisms may be morphologically identical and one may be nonpathogenic while the other is highly virulent.

The article is worth the price of the volume. Other articles in this issue are just as valuable.

O. H. B.

NEW AND NONOFFICIAL REMEDIES, 1932, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1932. Cloth. Price, postpaid, \$1.50, Jp. 402. lvi. Chicago: American Medical Association.

The recognition of a preparation for inclusion in this book singles it out from the host of new products of the pharmaceutical manufacturers as being a worthwhile addition to the existing armanentarium of the practicing physician. To be thus distinguished it must be shown, under the impartial scrutiny of the carefully chosen group which is the Council on Pharmacy and Chemistry, that it has acceptable evidence of therapeutic usefulness and that it is marketed in accordance with the honesty and straightforwardness envisaged by the excellent Rules which have been the outgrowth of the Council's quarter century experience in appraising the merits of new drugs.

In accordance with its custom of keeping the annual editions of New and Nonofficial Remedies in the forefront of current medical thought, the Council offers in this volume the newly revised articles: Barbital and Barbital Compounds; Fibrin Ferments and Thromboplastic Substances; Liver and Stomach Preparations; Mercury and Mercury Compounds; and Ovary. Perhaps the most noteworthy new preparations admitted are: nupercaine-Ciba, a local anesthetic; pentobarbital sodium, a barbituric acid derivative; and iopax, a new preparation for roentgenologic use. All of the ovary preparations formerly described are omitted and none of the new standardized preparations are described, although the names Theelin and Theelol are recognized in the revised general article. Another change of importance is the classification of articles formerly listed as "Exempted" under the heading "Accepted but Not Described." There is the usual excellent index and the augmented Index to Proprietaries Not Included in N. N. R.

A TEXT-BOOK OF MEDICINE; by American Authors. Edited by Russell L. Cecil, A. B., M. D., Sc. D.; Assistant Professor of Clinical Medicine in Cornell University; Assistant Visiting Physician to Bellevue Hospital, New York City; Associate Editor for Diseases of the Nervous System; and Foster Kennedy, M. D., F. R. S. E.; Professor of Neurology in Cornell University; Head of Neurological Department, Bellevue Hospital, New York City.

Second Edition, revised and entirely reset. W. B. Saunders Company, Philadelphia and London, 1930.

The reviewer gets the impression that this book should take the place once held by that splendid book on the Practice of Medicine by the great American clinician-Osler. When one pages through it and reads paragraphs here and there, it seems that just the right things and the right amounts are said to give students the view they should have of the disease in question. It does seem that a more careful editing of the text could have eliminated many words and probably shortened it considerably; for example, on page 39 in the third paragraph, in the last line, the word "any" and "all" might well have been eliminated without weakening the statement. In the last paragraph the words "at all" might well have been eliminated. In the last paragraph page 366, the word "some" is used twice without increasing the strength of the statement, and again, the words "any" and "very" are used when they might well have been eliminated. Such superfluous words are found throughout the text. They do not detract from the value of the book; they do, however, mar its beauty of expression,

O. H. B.

#### A DIAGNOSTIC PROBLEM

(Taken from the New York Sun.)

(Problem: What is the name of the engineer mentioned below? The answer can be ascertained by careful analysis of the statements made.)

A railroad train had a crew of three, and three passengers, traveling between Chicago and New York. The train crew is made up of an engineer, a fireman and a guard. Their names are Smith, Jones and Robinson, but not necessarily in that order. The passengers have the same names, but will be called Mr. Smith, Mr. Jones and Mr. Robinson.

Mr. Robinson lives in New York. Mr. Joncs' annual salary is \$5,000. The guard lives half way between New York and Chicago, and his namesake among the passengers lives in Chicago. The guard's closest neighbor is one of the passengers and his annual salary is exactly three times that of the guard. Smith beat the fireman at billiards.

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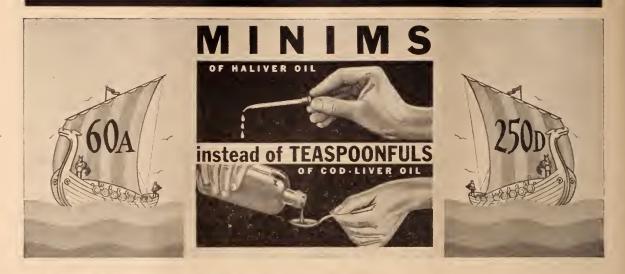
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WILLIAM C. MENNINGER, M. D. Topeka, Kans.

(Presented before the New Mexico Medical Society, at its Fiftieth Annual Meeting, at Santa Fe, N. M., May 19-21, 1932.)

The neuroses are probably the broadest field in medicine. In a very conservative estimate they represent at least twenty per cent of the practice of the general practitioner; every specialist, particularly the gastro-enterologist, the proctologist, the urologist, and the rhino-laryngologist, will attest the fact that his office is a gathering place of the neurotics. In addition, there are a great many neurotic individuals who never consult a physician because, in some instances, they do not regard themselves as pathological; in other instances, they feel too ridiculous about their feelings; and in still others, are embarrassed at the unpleasantness of their difficulties. Many alcoholics and drug addicts, who are primarily neurotics, never see a physician about themselves. Of those consulting a physician, the neurotic element is frequently missed in the diagnosis. We see numbers in this particular category daily who have consulted physicians to be instructed that their stomachs were out of order, or that their hearts were bad, or perhaps to have a portion of their thyroid removed. A large number of individuals with organic difficulties present also neurotic symptoms and it is often very difficult to distinguish the psychogenic from the organic symptoms.

The great prevalence of these disorders, however, in some part may be laid to the attitude of the physicians themselves. In the first place, there is a woful lack of technical understanding of this branch of medicine, because we receive an inadequate training in medical schools in the psychology of the individual. In fact, our medical schools train us to be somatists and to either neglect or deny the existence

of the psychological factors in the individual. Because in the neuroses we find a wide variety of physical symptoms, many physicians content themselves by attacking a particular physical symptom and permit themselves to ignore the psychological factors. For instance, a woman came to us very greatly concerned about her supposed heart difficulty, with the history that she had had her heart examined by at least ten different physicians, several of whom had noted the palpitation and occasional extrasystoles, and she had received a great deal of medication for it. Not a single one of these physicians, however, had inquired far enough to find that she had a very unhappy marital situation with an over-critical, tyrannical, domineering husband, of whom she lived in almost constant dread. Her symptoms had their foundation in her psychological difficulties, and all who gave her any medication or paid particular attention to her heart, unintentionally increased her difficulty.

In most instances, we literally are trained to be specialists of the body and, to a very large extent, ignore the fact that a personality exists within the body. We hear the phrase "treat the patient and not just the disease," but in many instances, when the physician fails to find objective physical pathology in these patients, he is at a loss as to how to regard or understand the psychological side. Then, too, there are a great many physicians who very much doubt the actuality and genuineness of their patients' troubles. Quite frequently I have had very excellent surgeons and internists ask whether the patient was malingering or had "hysteria," failing to appreciate that the two are just as different clinically as pneumonia and tuberculosis. Far too often the patient is instructed that he should help himself, or perhaps he is given the more common platitudinous advice to "cheer up and forget it," both of which are only indicative of the physician's inadequate understanding of the patient's difficulty. Because of the nature of

the illness, coupled with the physicians' unsuccessful treatment measures, the patient continues to reappear, with the result that many physicians become annoyed, irritated, and finally disgusted with the neurotic person. They fail to recognize two very important functions that the neurosis fills for the patient: one is the deliberate, though unconscious provocation of distress in persons nearest to the patient, i. e., his family, physician, and friends; the second is that fundamentally the neurotic has found a compromise for his struggle in his illness and unconsciously does not want to get well, despite conscious strivings in that direction.

#### CLASSIFICATION

We recognize that the problem of the neuroses is complex and even somewhat confused, and an attempt to make it relatively simple perhaps is presumptuous. That we may have a bird's-eye view of the conditions included under this head, we may attempt an outlined classification. Confusion exists, however, about the classification, because of contrasting views. One group of investigators is interested primarily in describing the neuroses in terms of physical pathology and physiology. They are concerned with the machinery by which the neurosis is produced and, consequently, stress particularly its physiology. Confusion is further created by the historical development of our knowledge of the subject, with the result that terms like "hysteria" and "neurosis," when created, had a very different concept than at present. As a consequence, the terms now used represent a mixture of historical development, psychological theory, physiological conceptions, neurological facts, and clinical manifestations. Depending upon the point of view, then, each conception has a different meaning. So long as one is consistent, however, and does not confuse psychological and physiological terminology, it probably makes little difference what classification he uses.

Thinking of patients as belonging to the hysterical or neurotic group leads easily to error in understanding them, as well as to the error of handling them mechanically and routinely. We cannot emphasize too strongly the notion that it is vitally important to remember first, last, and always, that the patient is a human being, and second, that he is suffering from a mental disorder having this or that appellation. An attempt to understand the significance of his illness in the pattern and function of his life, is best made, we think, through an interpretation of his ideas and behavior according to psychological mechanisms. It is very desirable to know more

of brain metabolism and inter-organ integration, but the psychological attack on the problems of mental disorder has been more fruitful in its result than the organic attack.

For these reasons, we much prefer the psychodynamic point of view, which originated through Freud's investigations. This view explains the why of the disease rather than the how: that is, it explains motives rather than physiology. We regard the neuroses as psychogenic in origin, i. e., psychological reactions to developmental factors and situations.

Thus the neuroses are forms of purely mental disorders, sometimes with secondary physical symptoms, but quite apart from the more severe mental disorders grouped under the psychoses. In the psychoses the personality's struggle with his environment is so difficult that he takes flight from the situation and, consequently, makes a breach between himself and reality. Such a struggle appears between the patient and the external world. In the neuroses, on the other hand, the individual does not deny reality and his sickness represents a compromise between the personality and the situation. Instead of becoming hallucinated and delusional, he develops symptoms concerned with himself. The struggle appears entirely within the individual rather than between the individual and the external world.

The neuroses are classified into what are called actual neuroses and the psychoneuroses. The actual neuroses exhibit themselves primarily as physical disorders and the causative factors are predominantly physical in character. They represent a temporary or permanent physical and physiological set of disturbances within the organism and are primarily a response to some difficulty in the present situation. The pathogenic agents are operative at the actual time the symptoms are present, as, for example, in neurasthenia we find the etiology most commonly an excessive masturbation or frequent pollutions or their psychological equivalents, that 1s, auto-erotic fantasies. In addition to neurasthenia, the actual neuroses include the anxiety neuroses and hypochondria. The anxiety neuroses are directly dependent on frustrated or, rather, dammed-up sexual energy and are characterized by anxiety from dangers within the individual. Hypochondria is characterized by a series of physical complaints and intense preoccupation with a particular bodily organ.

The psychoneuroses, on the other hand, do not present any physical basis but exhibit themselves primarily as strictly a mental disturbance. They are psychogenic in their origin, with responses condi-

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tioned entirely by the individual's development. They are the result of mental conflicts within the individual and the symptoms have a definite meaning expressed only in mental terms. The causative factors are predominantly mental. Under this group are included hysteria of two types, conversion hysteria and anxiety hysteria. In conversion hysteria the individual's mental problem or complex, as it is termed, is shoved back into the unconscious and there it is converted, unknown to the patient, into a physical symptom such as paralysis, stammering, torticollis, convulsions, or aphasia. In anxiety hysteria, the psychological problem or complex is shoved into the unconscious, but in this instance is converted into a set of ideas projected outside the body, such as fears or nightmares. The second great group of the psychoneuroses are called the compulsion or obsession neuroses. In these conditions the individual goes backward or regresses, as we term it, in his mental life further than the individual with hysteria, and his mental conflicts are converted into obsessive thinking and compulsive acting, such as counting numbers, washing hands, kleptomania, tics, habit spasms, insomnia, and so forth.

We recognize that possibly this classification, even though very briefly outlined here, may be too elaborate for the general practitioner. So we suggest the continued utilization of a much simpler classification, a diversion which is not entirely technically correct and yet is practically of considerable help, from a diagnostic point of view, to the general practitioner. This classification includes only three groups: neurasthenia, hysteria, and the obsessive states, or psychasthenias, as they were once called.

In neurasthenia the patient complains of difficulties which he expects the physician to see but which cannot be seen or demonstrated. One of our recent patients, a woman aged 52, describes this picture classically. "About five years ago I had a major sinus operation and I went right from that into mucous colitis. This caused me to be weak and nervous. I built myself up a little but then I suffered terribly with drawing in my throat. A famous professor from Chicago brought me out of it, but it seems that my poor body has been consumed with mucus. My nerves are terrible. My head felt queer and my stomach cramped. I have been on the verge of a nervous chill all the time but I have been fighting it hard. I have to get up at night to get my circulation started. I had to have a special nurse night after night because of my condition. My physician called in two more doctors and my bad kidney has been admitted every place I have been. Eating has been awfully hard and every bite of food is agony to get down, for my throat aches and feels so closed up. Then my bladder, too, has given me trouble. My eyes are bothering me more and my nose runs terribly every time I eat. My poor body is just sick all over." Perhaps it is necessary to add here that repeated examinations failed to show any physical pathology in this individual.

In hysteria the patient complains of a difficulty and presents symptoms which the physician can see unmistakably, although he cannot always interpret them. The following example of this condition illustrates not only a more common type of hysteria but also is frequently referred to as traumatic hysteria, because of its association with an accident. The patient was a day laborer, 39 years of age. While he was unloading cement from a freight car, a sack fell not more than two feet and hit him on the right shoulder. He continued to work but, about a week later, began to develop a left-sided contraction of his neck, which progressively increased as the intensity of his legal battle for compensation increased. When we served as a neutral examiner for the court, three months after the accident, the patient's head was entirely drawn over so that it nearly lay on the left shoulder. Neurologically there was no evidence whatever of any organic lesion and, under suitable conditions, the patient could even straighten his head erect without pain or distress.

In the obsessive states, the patient complains of a difficulty which he does not expect the physician to see or understand. A very pronounced case showing this picture was a married woman of 48 years who, eight months previous to examination, was playing cards one night and drew a royal straight flush in spades, which she had once heard was a bad sign. She felt shocked and threw down the hand without playing. She tried to play a little longer, but she was terribly scared and began worrying intensely. Then one thing after another came to occupy her mind as fearful things. At first it was mirrors and, if she saw a woman with a compact, she avoided that woman. As she walked down the street, she was afraid she might step on a mirror or perhaps a piece of glass. Dates began to harass her, the dates of her children's births or their deaths, the thirteens and other dates which must be observed with special precaution. She created new superstitions, feeling it necessary that, when she entered a house, she must ure the right foot first and the right hand first. If four people were together, she was distressed, because one of her children died on the fourth. She never bought anything that cost \$4.00 or 4 cents. "Everything is muddled and wrong in my mind. It is like a maze. I don't sleep for worry. A hundred and one things obsess and oppress me. God knows I can't keep it up much longer. My mind is never at peace and I make others about me ill. They have tried to do everything for me."

This patient was in the hospital for a time but, when her family decided she might come home, there were thirteen women in the institution and that number was such that she couldn't go. She hoped that somebody would leave and about mid-afternoon one of the patients was dismissed. She got ready to go and then another new patient came in. Then for three days she might have gone home if the census had changed, but it did not, and she felt this necessitated her staying five weeks longer.

#### ETIOLOGY

The primary causes for the neuroses are to be found in two general groups. The first is a persistence of infantile trends or infantile behavior patterns. These refer to developmental arrests at various levels in an individual's mental growth, and their continued expression in adult life. "It is a common observation that the behavior of every neurotic patient presents features which are more or less characteristic of the child, more particularly what is known as the spoiled child. The neurotic is generally sensitvie, very often extremely so. He is inordinately attached to his family, more particularly the mother, and craves more than his share of attention. He likes to exhibit his merits or even his failures, and wants people to talk about him or his illness. He is emotionally unstable, oscillating apparently without reason between elation and depression. He is either afraid to be alone or is impetuous in his ways. He is intensely preoccupied with himself and interested in everything that concerns his welfare, so that he usually gives the impression of being superficial, of often possessing excessive enthusiasm but never for very long. He is inordinately ceremonious, particularly about food, and is generally preoccupied with his bodily functions. His dependence upon, and undue attachment to, his family interfere with his making close friends or keeping friends he has made, and stand in his way of falling in love or being happy in marriage." (Quoted from Wechsler, "The Neuroses.)

The second group of causes centers around an abnormal psychosexual development, either by arrest or by distortion of the normal development of the individual, or by the process which we call regression, a slipping back to a lower level after having achieved a higher level. The, individual passes through the

baby stage, which we call auto-erotic, in which all his interests are centered about himself. Normally he must grow up, passing through stages of psychosexual development, when he is interested in those of the same sex, the normal pre-adolescent period, and finally, if he is to achieve adulthood, must become interested in those of the opposite sex, with a complete replacement of his parental and particularly his mother attachment, to a mature social interest in his mate, his associates and his community. In this process of growing up, the individual may fail to grow completely out of one stage into the next. He may distort this development, as, for instance, by giving his wife the same kind of love which he gave his mother. He may reach a certain level, find adjustment there too difficult and, entirely unconsciously to him, go back to an earlier level where adjustment is more simple.

The secondary causes perhaps might be discussed first because, in most instances, the patient is sure they are primary, and they do superficially appear to be primary. These include fatigue, illness, shock, accidents. Such agents, however, must be regarded only as precipitating factors. They are literally "the straw that breaks the camel's back." In reality, the stage with its scenery and the actors is all set for the performance and the illness or shock only serves to lift the curtain. These precipitating factors thus draw the line between neurotic tendencies and the neurosis and serve to bring to the surface a condition which has previously been controlled and superficially hidden from view.

#### MECHANISMS

To understand the nature of the neuroses, we must understand not only the etiological factors but also the psychological steps that take place in the individual to make him develop the symptoms of physical complaints, hysterical paralyses, fears, compulsions, and the like. In every case we must understand that primarily the neurosis is a conflict in which the disease itself represents a compromise, between the individual and his situation, which is acceptable to the patient. Always these compromises represent frustrations, in the sense that the individual is thwarted from achieving his desires and so compromises with the situation to produce his symptoms.

The following example is typical of the neurotic process. My friend dies on Sunday and his funeral is set for Tuesday. I know I must go to his funeral but I do not like funerals and I do not want to go. Nevertheless, it is imperative, because of social custom, that I attend. I go through Sunday and Monday dreading Tuesday afternoon. Tuesday morning

I develop a headache, really a severe headache, which necessitates my going to bed, and this continues through the afternoon. Thus I feel that certainly I would not be expected to attend the funeral with so severe a headache. I excuse myself in this fashion, accomplishing unconsciously my purpose of evading the funeral and punish myself with the headache for what I know I should have done. In this instance there is a part of me that wants to go to the funeral and another part which doesn't want to go.

In every case, as in this, the first psychological step is a sort of doubling of the personality which we call dissociation. In such a step the patient separates off a set of ideas, which we call a complex, from his real personality, because this complex is undesirable or unacceptable to his conscious self. Rather common examples seen in neurasthenia are complexes with regard to masturbation, pollutions, or autoerotic fantasies. In the typical old maid, the whole matter of her complexes centers around the deficient external sexual stimulation with the excessive distorted discharge of energy in her characteristic eccentricities. Long engagements produce an excessive external stimulation without adequate discharge, or very often the individual's sexual contacts are in decided conflict with his morals. All of these are in a sense complexes which we find express themselves through other mechanisms to follow.

The second step is a repression of the complex, which means that these ideas which are separated off from the conscious life are forced into the unconscious. The patient attempts to ignore or deny the complexes because they are unpleasant or unacceptable, and the mental mechanism which is used to shove them into the unconscious is called repression. But the ideas are still a part of the individual even though unconscious to him.

In our example of the funeral, there must be other ideas associated with the particular friend or with the idea of death which were effective in previous similar situations, which gave rise to the antipathy to attend the funeral. These ideas, however, over a period of time have come to be denied by myself but have taken their place in my unconscious. Or, in other words, they have been repressed. They continue, however, to seek expression in the development of my headache.

The patient in the third step unconsciously slips backward in his psychological development to a lower level or an earlier stage in his development, where the repressed ideas are able to find an opportunity for expression. If I am to be mature, I cannot harbor the idea that I should not go to the

funeral or that I need not go, but if I can turn back the pages of my life to a stage when responsibility and friendship were of less importance, then I can let myself be convinced that I do not need to attend the funeral. In the individual's unconscious, he goes back to an earlier stage of his development where these influences may express themselvs harmoniously.

In the example cited, I develop a headache, which is illustrative of the next step, namely conversion. These complexes find expression by being converted into the physical symptoms. In neurasthenia, the repressed complexes are converted into vague physical complaints. In the anxiety neurosis, they are converted into anxiety. In hypochondria, they are converted into great attention about various organs of the body, like the heart or stomach or uterus. In hysteria, they are converted into the paralyses, aphasia, stuttering, or convulsions. They are sometimes projected and distorted to ideas outside of the individual, like the fears of high places, of darkness, of crowds, and in the compulsive states, the individual substitutes an innocent or uninvolved object or part of himself, like the washing of the hands, stepping on cracks, and other ceremonial procedures.

What we must see in the patient with the neurosis is that the repressed ideas must and do express themselves. The fact that these ideas are repressed, means they are a part of the patient's unconscious. He fails to recognize them for what they are but, because of their power, they seek and find expression. This expression, however, is permitted only in some disguised form and then only if the patient can suffer punishment for its appearance. Again returning to the funeral-headache example, I escaped the funeral but I punish myself with the excuse that I give, namely, the headache. The physician must recognize that I accomplish something by my headache and that this accomplishment brings with it a distorted sort of pleasure because of the accomplishment. Consequently, the observation is often made by physicians that the neurotic is "happy in his sickness," or enjoys a "sweet sorrow." The patient's unconscious wishes find expression in his symptoms, and yet these very symptoms serve as a punishment.

Briefly, the steps that operate to bring about the symptoms in the neurotic individual are, a conflict, a dissociation of the undesirable portion of the conflict, a pressing of this part into the unconscious, a regression to a simpler psychological level where it can gain expression by conversion into symptoms.

#### TREATMENT

If we fully understand the psychological nature of the neuroses, we should be able more adequately to fit the treatment to the illness. It is essential to recognize that we cannot treat psychological illness simply with physical measures, with any more success than we can treat physical illnesses with merely psychological measures. The neurotic has found his compromise in his backache, or numb spells, or fears, and unconsciously is satisfied with it. His unconscious does not want to get well, despite his conscious efforts in that direction. He goes from doctor to doctor, always seeking help and yet unconsciously never wanting to find it. The treatment must depend on the type and the stage of development of the neurosis and can be discussed best under three heads: physical, environmental, psychological.

Under physical treatment, we should emphasize precautions in handling the patient, advice and recommendations to be made to him, and the place of operations.

#### · I. Physical.

- 1. Precautions: We are impressed with many instances of the mishandling, on the part of physicians, of neurotic patients, which undoubtedly accounts for the fact that this group are the boon for the naturopaths, the chiropractors, the osteopaths, and the like. In handling a case, certain routine procedures are indicated, such as the physical and neurological examinations, laboratory analysis and special examinations; but the findings and further advice must be very cautiously imparted to the patient. The neurotic is looking for corroboration of his physical complaints, and, because most of them see many doctors, they are bound to find a certain number of physicians who will indicate concern about their palpitation or the faint trace of albumin in the urine, and the like. The neurotic is unconsciously seeking this very solace, and these physicians are unintentionally adding to the neurosis rather than detracting from it.
- 2. Advice. The majority of these patients need advice and instruction as to physical hygiene, but here, again, extreme precaution must be used in not placing undue emphasis on this advice. These patients are all too willing to take medicine, sedatives of any kind, stomach medicine and tonics, and place a great deal of importance on these. It is unquestionably true that far too often, because the physician is perplexed, he allows the patient to place great emphasis on the medication, but such practice is unscientific and we must see that it is detrimental to the patient in the long run. Likewise, prescribed diets may be a source of great satisfaction to the patient because of his tendency in many instances to

become a faddist about any suggestion that is made to him. So, often, we find patients who live on the most bizarre sorts of diets without any scientific basis whatever. Exercise is perhaps often indicated and very practical but, like various physiotherapy measures, does not fundamentally relieve the psychological conflict in the personality and, while they may be beneficial, they may be very harmful.

3. Operations. In no other field in medicine, except in the psychoneuroses, do patients demand operations. They unconsciously want to be punished and very frequently will go from surgeon to surgeon until they find someone who will operate upon them. Far too often, we remove tonsils, letting them assume that it is going to make a great difference in their condition, when we know absolutely that in nine out of ten cases it will probably in no way influence the neurosis. The same is true regarding the extraction of teeth, the removal of ovaries, and other forms of abdominal and pelvic surgery. In many instances, undoubtedly, the operation does help the patient temporarily because he is punished, which his unconscious desires, and yet, in a majority of cases, over a period of time his neurosis is not materially helped. In many instances the individual gets well from one operation, to start out seeking another one. Recently a case came to us with a history of six major abdominal operations. A reasonable doubt may have justified the first and, possibly, even the second operations, but there is no excuse for the last four.

#### II. Environmental.

This second general class of treatment may be regarded as palliative. The first simple rule is to listen to the patient tell his story, which, in the present-day practice of medicine, is in far too many instances neglected. He may be long and involved, but this first step is essential to success. It is essential to gain his confidence, and if you don't listen to it, someone else will. The mental catharsis from such a procedure is in many instances the most practical treatment measure that the physician can use. Physical hygiene measures are of value, partly because often the neurotic individual needs to have his daily program organized and scheduled, and partly because these measures are a more propitious outlet for the neurotic tendencies than are the somatic complaints. But exercise, diet, and physiotherapy are merely substitutions for the attention focused on the physical symptoms, without any fundamental change in the psychological conflicts. Very often a change in the situation should be advised. It is comNOVEMBER, 1932 449

mon for a physician to recommend a change in climate for the individual's physical health and yet we must recognize that in the neuroses it is often more advisable to recommend a change of climate for the emotions. Pressure might be greatly relieved in escaping an unhappy marital relationship, business conflicts, parental influences. In many instances, the physician should feel his responsibility in giving simple, frank, sexual education, which in some instances may entirely relieve the pressure of the conflicts. The "rest cure," so called, is practical in many instances, but usually needs to be followed by a change in the environment. Specific occupational direction is sometimes possible, in which the patient can replace his symptoms in a practical productive form, such as in a change of business, particular type of recreation, handicraft, reading, music, or art. The fact that the patient might be able to project these symptoms into his work rather than keep them within himself, makes it possible to relieve a great many neurotic individuals.

#### III. Psychotherapy.

The most rational and, certainly, the most scientific type of treatment, is psychological. The psychological treatment can be of two types, supportive and psychoanalytic. In the supportive type, we may simply permit the patient to talk his symptoms out, which is termed expressive psychotherapy. In surgical language it would be called free and adequate drainage. In a few instances a suppressive psychotherapy is of advantage, in which we do not encourage the verbal expression but urge the conversion of the patient's energy and interest into more productive channels. In surgical terms, this is much like a wet dressing. The abscess may not be ready to open and, on the other hand, it may subside without the necessity of opening.

The second type of psychological treatment is psychoanalysis. Psychoanalysis was originally a method, worked out by Freud, whereby people who had nervous illnesses which no one could understand, not only came to understand their own illnesses but were cured of them. It is still one of our useful methods of treatment but has also become a method of scientific research. One frequently hears of various cults and conflicting leaders in the field of psychoanalysis, but there is no such division of leadership. All psychoanalysis is Freudian. Numerous men, both European and American, have evolved theories and written books and preached sermons in the name of psychoanalysis of their own particular variety. But there can be no heretical variety of psychoanalysis

any more than there are conflicting schools of chemistry or physics. It is only because the science is so young that it is possible for certain upstarts to convince any portion of the uninformed that this is so.

It may be queried how psychoanalysis offers us aid in circumventing the difficulties we see in the neuroses (and it is safe to say that psychoanalysis is a successful technic just because it has overcome them). It has done so, first of all, by perfecting a method of getting at the unconscious material of the mind. In the second place, by a vast amount of research, the symbols and language of the unconscious have become ufficiently well translated to enable us to understand this material. Thirdly, it was found possible to arrange the relations between the individual to be studied and the observer, so that there would be a premium upon gaining his cooperation instead of a premium upon his success in hiding his motives. And, finally, the blind spot in our own personalities is overcome by the logical process of having prospective observers first make an exhaustive study of themselves. No psychoanalyst is recognized as competent today who has not himself been psychoanalvzed.

Psychoanalysis is the only type of treatment that gives the patient control of the situation, through insight into the unconscious, which is the seat of the neurotic conflicts. It necessitates a desire on the part of the patient to cooperate, and a fair amount of intelligence. But to the general practitioner it is in the same class with major surgery. It is a specialized type of major psychiatry and it should be used only in the hands of psychiatrists who themselves have been analyzed.

#### SUMMARY

In the neuroses we are dealing with a very wide field of medicine, for the reason that all of us have neurotic tendencies. When the pressure of the environment becomes too great, we have to compromise with these tendencies, and we may develop a neurosis. We regard it as always a compromise between the neurotic tendencies and the situation, which is acceptable, but entirely unconscious in its workings, to the individual. These unconscious conflicts express themselves in bizarre ways, almost always with pain or distress, but because they find expression, which is fundamentally their aim, the individual is in a sense satisfied. His unconscious is satisfied and it does not care to make any change. So, despite the strivings of the conscious to get well, the more powerful unconscious does not desire to get well. In the final analysis, recovery is possible only when the intrapsychic conflicts are resolved.

## PURE MILK AND HUMAN NUTRITION.

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(Address before the El Paso County Medical Society, September 9th, 1932.)

In the noteworthy report on nutrition' prepared by the Committee on Growth and Development, of the White House Conference on Child Health and Protection, there occurs the significant statement that "the indispensable part of a satisfactory diet consists of a nucleus of a liberal amount of milk, surrounded by a group of fruits and vegetables, the whole providing the requisite amino-acids, vitamins, mineral elements, and roughage." All authorities on nutrition seem agreed that every growing child should consume at least a quart of milk in some form every day, and that a pint a day is the desirable minimum for adults.

Many recent investigations, both clinical and laboratory, have demonstrated that milk possesses unique dietary properties. In a brilliant paper presented before the American Medical Association in 1931, Sherman² raises the question as to whether milk may or may not be "one of those 'wholes' which, while chemically a mixture, is in the philosophical sense a sort of synthesis whose significance is greater than a mere summation of its parts?" This authority answers the question by stating that milk is probably both, and that undoubtedly this essential food has involved in it substances and interrelationships whose nutritional importance is even greater than is yet fully appreciated.

Milk may be divided in the laboratory into its constituents—the fat, proteins, minerals, lactose, vitamins, enzymes, and fluids, which, taken together, earn it the sobriquet of "most nearly perfect food." When, however, these individual constituents are recombined to make a synthetic product, the same results in the promotion of human growth and health cannot be obtained as can be secured from the natural product. This phenomenon indicates that milk contains dietary substances as yet undiscovered or recognized and that, as Professor Sherman implies, the whole is greater than the sum of its known components.

The first clues to the presence in foods of those accessory dietary factors now called vitamins, came as the result of experiments with milk.<sup>a</sup> As early as 1881, Lunin in Germany found that laboratory animals could live on a diet of whole milk, but suc-

cumbed quickly on a combination of purified constituents of milk. In 1906, Hopkins in England observed that experimental animals failed to grow on purified mixtures of casein, lard, starch, sucrose, and mineral salts, but thrived when small amounts of milk were added. Announcements in 1913 of the discovery of the first vitamin, the fat-soluble A, by Osburne and Mendel, and simultaneously by McCollum and Davis, resulted from experiments with milk, as did also the discovery of the water-soluble vitamin B in 1915.

Today we know that milk is always an excellent source of vitamins A and G, a good source of vitamins B and E, and a fair source of vitamins C and D. We know also that the content of vitamins C and D in milk is dependent upon the nature of the feed given to the cattle. Recent investigations at the Walker-Gordon farm at Plainsboro, New Jersey, have shown that the potency of a certified milk in vitamin D, the antirachitic agent, can be increased from sixteen to twenty times that of average winter milk, by the addition of the proper amounts of irradiated yeast to the cows' rations. Clinical tests have demonstrated that such a biologically activated milk will cure and prevent rickets in young infants.4 Similar results have been obtained with irradiated powdered milks.5

The influence of milk on the growth, health, fertility, resistance, and longevity, of its regular consumers has been proved by a series of investigations conducted by Sherman at Columbia University in New York City. These experiments have involved more than thirty generations of laboratory animals and have extended over a period of more than a decade. If similar tests were attempted on human subjects, they would require about 600 years for their consummation.

A proportion of one-sixth whole-milk powder and five-sixths whole-wheat powder, with a little salt and plenty of distilled water, is an adequate diet for there animals. On it they reproduce, nurse their young, and grow and live satisfactorily. When, however, the amount of milk in this diet is increased from one-sixth to one-third, some striking results are achieved. The diet becomes an optimal instead of an adequate one, and there is a corresponding increase in the vitality, fertility, and longevity of the subjects.<sup>6</sup>

Not only is the resistance to disease improved by means of this greater amount of milk in the diet, but the prime of life of its consumers begins earlier and lasts longer. There is likewise a definite, measurable increase in longevity. Statistical studies, in which

the chance of error is computed to be only one in ten thousand, reveal that the length of life can be increased 10 per cent by means of this diet. Translated into human experience, this indicates that six years might be added to the present average length of life in this country by the employment of proper nutrition, in which milk would obviously have a leading role.

Laboratory studies such as these have received confirmation from extensive tests with human subjects. In Scotland, nearly 25,000 children participated, between 1926 and 1930, in the greatest single feeding experiment ever conducted. These tests began in 1926, when approximately 1300 school children were divided into four groups, two of whom received supplementary milk feedings of three-quarters of a pint of milk a day, while one group got biscuits of equal caloric value and the fourth served as the controls. A second experiment with another 1200 school children was conducted in the following year.

When the results were analyzed, it was found that the milk-fed group of children had increased their weights 45.4 per cent more than the non-milk group, and had increased in height an average of 23.5 per cent over those who were not so fortunate as to get supplementary milk feedings. In order to submit these findings to an even more severe confirmation, 20,000 children were selected for a third test. Of these, one-half were given raw or pasteurized milk and compared with the other 10,000 who were not so favored.

The effect of the use of milk in the diets of this vast number of school children demonstrated, in the words of Dr. J. Parlane Kinloch, the chief medical officer, "that the addition of milk to the diet of children has a striking effect in improving physique and general health and increasing mental alertness. They suggest also that, apart from its own food value, milk enables the other constituents of the ordinary diet to be more fully used as growth factors."

One important point brought out in this study was that pasteurized milk, which was used in about half the cases, gave as excellent nutritional results as did raw, tuberculin-tested milk. Authorities are agreed that the process of pasteurization, as carried out today in modern machinery, has virtually no effect upon the unsurpassed nutritional qualities of milk, even though it destroys 90 per cent of the bacteria, including any pathogens that might be present. The careful heating of milk to 142° F and the holding of it at that temperature for 30 minutes, followed by rapid cooling, is a measure that puts the final seal of safety on a clean milk produced under

sanitary conditions. All progressive health authorities are agreed that proper pasteurization should be applied to all market milk except that of certified grade.

Despite the promotion of annual milk-for-health campaigns by the Texas State Board of Health and other agencies, the consumption of milk in this state is much below the quantity that would be conducive to the best nutritional and economic interests of the people. Several years ago, an investigation by the United States Department of Agriculture revealed that in some parts of Texas less than a third of a pint a day was the per capita average. In a comparative study of the dietaries of Texas children, Winter reports that the average amount of milk taken by American children was only about 2½ cups a day, while Mexican and Negro children imbibe less than 11/2 cups daily. As a consequence of this deficiency of milk in the diet, as well as because of other defects, these children display a consistent inadequacy of calcium, with the attendant physical troubles due to this lack.

In recommending the use of adequate amounts of milk in the daily diets of children and adults, physicians stress, of course, the necessity of pure milk supplies and advocate the employment of either certified or grade A pasteurized milks. The use of these grades obviates the possibility of the spread of such diseases as typhoid fever, scarlet fever, septic sore throat, undulant fever, and tuberculosis, which may be disseminated through insanitary and contaminated milk supplies. A pasteurized milk is, incidentally, superior to boiled milk from the nutritive standpoint.

Pure milk is also available today in the form of the various concentrated milks, such as the powdered, evaporated, and condensed. These are whole milks produced under proper hygienic conditions, from which some or all of the normal water content has been removed by careful heating methods. Since the manufacturing processes are such that these milks are either sterile or extremely low in bacteria, they are clean and safe milks, uniform in composition, and, because of the fine dispersion of the fat particles, more digestible than fluid milks. The heating processes leave the vitamins and other nutritional properties of the milk virtually unimpaired.10 A powdered milk, such as the well known Klim, or a standard evaporated milk, may when reliquefied be used for all of the same purposes as the best grades of certified or pasteurized milk, and usually with greater economy, or it may often be used to advantage in concentrated form.

Since the dawn of history, milk has been recognized as the most important food of man. Of it Aretaeus, the famous Greek physician, wrote two thousand years ago: "To take milk is pleasant; to drink it is easy; it contains solid nutrition and it is of all foods the one which is most familiar from childhood; it is even pleasing to the sight on account of its whiteness." The researches of modern medical and biochemical science have sanctioned our admiration for the dietary values of milk and have given us ample reasons to consider it as the one single food for which there is no dietary substitute. Pure milk should properly be the basis of every well-balanced and adequate nutritional regime for infants, children, and adults, and as such it will be a most potent factor in the development and maintenance of general good health, satisfactory virility, and physical welfare.11

#### REFERENCES

1. Growth and Development of the Cnild. Part III: Nutrition. White House Conference on Child

Health and Protection. Century. 1932.
2. Sherman, H. C.: Some recent advances in the chemistry of nutrition. Jour. A.M.A., 97:1425 (Nov. 14) 1931.

3. Tobey, J. A.: Milk as a source of vitamins. Clin. Med. & Surg. 39:189, (March) 1932.
4. Hess, A. F.; Lewis, J. M.; MacLeod, F. L.; and Thomas, B. H.: The antirachitic potency of the milk of cows fed irradiated yeast or irradiated

ergosterol. Jour. A.M.A., 97:370, (Aug. 8) 1931.
5. Hess, A. F.; and Lewis, J. M.: Milk irradiated by the earbon are lamp. Jour. A.M.A., 99:647,

(Aug. 20) 1932.

Sherman, H. C.; and Campbell, H. L.: The influence of food upon longevity. Jour. Nutrition, 2:415, (March) 1930.

Leighton, G.; and Clark, M. L.: Milk consumption and the growth of school children. Lan-

cet, (Jan. 5) 1929.

Leighton, G.; and McKinlay, P. L.: Milk eonsumption and the growth of school children. Department of Health for Scotland. 1930.

9. Winters, J. C.: Comparative dietary studies of American children of nursery school age. Amer. J. Pub. Health, 21:1003 (Sept.) 1931.

10. Tobey, J. A.: Nutritive value of the processed milks, Clin. Med. & Surg., 38:410, (June)

Crumbine. S. J.: and Toboy. J. A.: The Most Nearly Perfect Food. Wlliams & Wilkins. 1929.

TREATMENT OF INDIGESTION, THE UNDERWEIGHT, AND ALLERGY, WITH THE OUD AND NEW FORMS OF DIGES-TIVE AGENTS.

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The purpose of this paper is to discuss the common causes of indigestion and its resulting complications, such as underweight and allergy. There are many causes of underweight, but only that phase of the problem which is related to imperfect digestion and absorption will be considered. We believe that allergy may be due, in part at least, to the inability to digest completely the complicated protein molecule, the absorption of which may cause sensitization, and that the perfection of digestion plays an important part in the treatment of all forms of allergy.

#### THE DIAGNOSIS OF ERRORS IN DIGESTION

The simple Ewald test meal followed by fractional test meals with additional stomach stimulants, such as alcohol given with the meal, or histamine injected subcutaneously, affords an easy method of studying the secretory efficiency of the stomach. Following a test meal, the aspirated stomach content should show 20 to 40 degrees of free hydrochloric acid and 40 to 60 degrees of combined /acid. The peptic power, by the Metz egg-albumin tube, should show 256 degrees of peptic activity.

In this paper the term "hypochlorhydria" is used to indicate a condition where the free hydrochloric acid is less than 20 degrees and the total acidity is less than 40 degrees; the term "achlorhydria" is used to indicate a condition where no free hydrochloric acid is found in the stomach, even after alcohol or histamine stimulation; and the term "achylia" is used to indicate a condition in which both hydrochloric acid and the enzymes pepsin and rennin are absent.

Patients with hypochlorhydria, achlorhydria, and achylia do not usually complain of any stomach symptoms. They may not complain of any symptoms referable to the gastro-intestinal tract. Their most common complaints are alternating attacks of constipation and diarrhea, abdominal distress, and distention. Hypochlorhydria and achlorhydria are very common conditions. Many statistical surveys show that the incidence in adults is nearly in proportion to the age. That is, 50 per cent of the adults 50 years of age have either too little acid, or no acid, in their stomachs. The condition is not uncommon in babies and small children.

A positive diagnosis of impaired digestion is much more difficult to make. Where bile is absent or greatly diminished, the stools are usually clay colored, both from the lack of bile and because of the large fat content. Such patients are also usually jaundiced. Abnormal amounts of undigested carbohydrate, protein, or fat in the stools of patients with normal stomachs who are not taking cathartics, or in whom there is no evidence of serious intestinal infection or hypermotility from any cause, might be

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due to a lack of pancreatic juice. At the present time methods are being perfected for taking samples of the duodenal content. Many of these patients state that they can not eat starchy foods because they cause abnormal amounts of intestinal gas. Such patients complain that they can not eat the usual amounts of protein foods because they seem to cause abnormal amounts of intestinal gas which have a foul odor. Large amounts of indican are usually found in the urine, and the breath may have an unpleasant fetid odor. Some patients say that fat foods such as cream and butter do not enable them to gain weight. In such cases, examination of the stools usually reveals that, although well colored with bile, they contain abnormal amounts of fat.

## THE TREATMENT OF INDIGESTION WITH VARIOUS DIGESTIVE AGENTS.

Acid fruits and fruit juices: Clinically, in the hypochlorhydrias, the achlorhydrias, and the achylias we have found the use of the acid fruits and fruit juices efficacious. A whole grapefruit is prescribed for breakfast and a glass of lemonade with the other two meals. Custom decrees that grapefruit should be eaten first at breakfast. This places a fairly large amount of acid material in the stomach first, which should help regulate the emptying time of the stomach if the theories about the alkali-acid response of the pyloric sphincter are correct. About two ounces of lemon juice are prescribed for each glass of lemonade. The patients are instructed to drink onethird of the lemonade before beginning the meal, and to sip the remainder as the meal is eaten. The grapefruit and lemonade may be sweetened to taste, since sugar does not neutralize acid, and since it is desirable for its caloric value in the underweight cases. A glass of orange juice may be added to the breakfast if desired, and buttermilk may be used in place of sweet milk. Lemon juice or vinegar should be used with salads or fish. Pickles may be eaten with meat courses. Some of these patients seem to tolerate sauerkraut when cabbage causes distress. On camping trips, when the citrus fruits are not available, a teaspoonful of dry citric acid may bey used to make an artificial lemonade. Some patients prefer to mix the lemon juice or grapefruit juice with orange juice. In infant feeding, buttermilk or lactic-acid milk is often used. In our earlier work, we had a malnutrition patient who was always better when she went to France, where she drank the native sour wines.

Not much dilute hydrochloric acid is given, because we do not believe that enough can be given to do any particular good, without harming the patient.

All hydrochloric acid given must be passed in the urine. It does not necessarily produce an excessively acid urine, because the human kidney has the ability to compensate by increasing its ammonia output. The hydrogen-ion concentration of the urine may not change much, but the total acids, that is, the titratable acidity plus the ammonia, are increased. Occasionally, five to ten drops of hydrochloric acid are given three times per day, with the acid fruits and fruit juices, to patients with achylia, but whether such small amounts have any beneficial effect is not known.

Pepsin: Laboratory studies show that at the same pH pepsin works just as well in a citric medium as in a hydrochloric-acid medium. Ivy has shown citric acid to be an efficacious stimulant to secretin formation.

Pepsin is easily supplied in the form of two-grain values three times per day after meals, or in the form of the palatable elixir of lactated pepsin. Since U.S.P. pepsin will digest 3000 times its weight of protein, the dose need never be larger than one or two grains three times a day. This never seems to do any harm. We have given as high as fifteen grains of pepsin three times a day, but such large doses seem to cause vague gastro-intestinal symptoms.

Bile Salts: Theoretically, bile salts should be beneficial in the emulsification of fats, if the bile is diminished, but such cases are rare and we have had no experience with the use of bile salts.

Pancreatin: When insulin made possible the use of adequate diets in the treatment of diabetes, in a few cases we encountered such grave digestive disturbances that the patients were much more comfortable on their restricted diets than when fed more food. Indigestion from a probable lack of pancreatic juice is not very common, however, in diabetes. In one of our first cases of this type, because large amounts of undigested foods were found in the stools, we concluded that not only the Islands of Langerhans were involved, but that there was probably also a sclerosis of the whole gland. This patient was given ten-grain capsules of pancreatin with such satisfactory results that in due time he gained to a normal, weight with an entire absence of his symptoms of indigestion. Similar capsules of pancreatin were tried on other cases of diabetes with indigestion, without success. It was then found that our first patient had an achlorhydria and that our next patients had normal stomachs. We assumed that a normal stomach made inactive or destroyed the pancreatin, although some believe that it is only inactivated and that it may become active again in the small bowel. We

then sought an enteric-coated pancreatin.\* The efficacy of the coating was proved in the following manner: The experimental coating was placed on a substance opaque to the x-ray, such as bismuth. Two coated tablets were given to a patient each hour and immediately followed by an x-ray picture. The last two taken, sometimes with a little powdered barium, would locate the stomach, when the condition and position of the ones taken before could be noted. By this method we proved that the coating was intact as long as the tablets remained in the stomach, but that it soon dissolved after the tablets reached the small bowel.

The enteric-coated five-grain pancreatin tablets were given, not only to diabetic patients with probable indigestion of pancreatic origin, but to many other patients with a similar form of indigestion, with excellent results. They were also given to completely depancreatized dogs, in conjunction with insulin hypodermically, with excellent results from a nutritional standpoint.

Eventually, instead of using the U.S.P. strength of pancreatin, which will digest 25 times its weight of carbohydrate and protein, triple strength pancreatin was used. This product is known as the Panteric tablet, triple strength. Later on, tiny granules of pancreatin were coated with the same type of coating and were dispensed in five-grain capsules. We have not as yet devised a way of visibly proving the efficacy of the coating on the granules, as we did with the tablets, but clinically they seem to be somewhat better than the tablets. Each five-grain capsule contains about 200 coated granules of pancreatin. The gelatin capsule is merely a container and dissolves in the stomach, permitting the coated granules to mix with the food. As they pass with the food into the small bowel, they afford about 200 foci from which digestion can take place, instead of one, as with the tablet. The capsules are known to the drug trade as Panteric Capsules.

We have repeatedly tested the strength of the pancreatin used in both the tablets and the capsules. The granules are ground in a mortar to remove the coating. Usually, the pancreatin supplied would digest 100 times its weight of carbohydrate and protein in vitro. Three five-grain tablets, or capsules containing five grains of triple-strength pancreatin, will

theoretically digest from 75 to 100 grams of carbohvdrate and protein.

At the present time, a few carefully-controlled experiments are being carried on to determine the exact role which pancreatin plays. During the first, or controlled, period of six weeks to two months, the patients are given careful diets together with any other indicated form of treatment except the pancreatin. In the second period, pancreatin is added. These reports will be published later.

Taka diastase: Takamine succeeded in making a concentrated form of diastase from the fungus Aspergillus oryzae. This was placed on the market under the trade name taka diastase. This form of diastase will digest 300 times its weight of starch. It was said to work in both acid and alkaline media.

We still had a number of patients who, even while taking the enteric-coated pancreatin, could not take a normal amount of starch without having abnormal amounts of abdominal gas, suggesting that they still had a limited ability to digest starch. Our first efforts were directed toward making a pancreatic preparation which would digest more starch. This can be done, but the preparation is of only theoretical value, because the cost of its preparation is prohibitive. Taka diastase tablets and the elixir of taka diastase were then tried, with only an occasional successful result. The taka diastase seemed to help those patients with hypochlorhydria and achlorhydria to whom the acid fruits and fruit juices had been given. Ohlsson and Swaetichin' found that "taka diastase loses its power to hydrolyse starch in acid or alkaline solution (below pH 2.0 and above pH 11.5), but on neutralization the activity slowly returns. The enzyme has a maximum stability between pH 5 and pH 9. Reactivation in neutral solution (pH 6.7) is generally complete in an hour, but both inactivation and reactivation are delayed by the presence of starch and accelerated by phosphate. Taka diastase acts between pH 2.5 and pH 8.0, with an optimum zone between pH 4.5 and pH 6.5. Although taka diastase is inactivated in the acid stomach, it is slightly more effective than malt diastase, and under normal conditions the enzyme will become reactivated in the intestine."

In our own laboratory, we found that the action of taka diastase was completely inhibited in the presence of a concentration of hydrochloric acid such as is found in a normal stomach, but that its digestive power was unchanged in the presence of a concentration of citric acid pH 3, such as we are using in the treatment of achlorhydria.

Enteric-coated granules of taka diastase were then

<sup>\*</sup> Generous amounts of Panteric tablets, Panteric capsules, and capsules containing enteric coated granules of taka diastase were supplied to us for c'inical trial by Parke, Davis & Company, for all of the initial experimental work.

supplied to us. This material was put up in the form of five-grain capsules. Clinically we have found the taka diastase capsules, either alone or in conjunction with the panteric capsules, valuable where patients complain of abdominal gas.

Summing up, depending upon the clinical and laboratory findings, a patient with indigestion is given an individualized diet together with one or more of the following digestive agents: acid fruits and fruit juices, pepsin, enteric-coated pancreatin, and entericcoated taka diastase.

#### UNDERWEIGHT

Fairly satisfactory average weight tables based on age and height are available in all standard books on nutrition. The United States Public Health Service says that the weights given on weight charts are only general and that allowances must be made for each individual case. For instance, a person with small bones, of certain age and height, would weigh less than a person of similar age and height with large bones. It is believed that a person up to 30 years of age should be a few pounds overweight rather than underweight, and a person over 30 years of age should be a few pounds underweight. Some nutritionists claim that ideal and average weight tables agree fairly well up to 30 years of age, but that the average weight tables past 30 years of age are usually too high.

For a number of years, we have been using the average weights for the age of 30 for recommended weights past 30. The following tables seem to be satisfactory from a clinical standpoint:

Recommended weights for women 30 or more years of age.

Height	Weight	Height	Weight
(ft. & in.)		(ft. & in.)	
4-8	112	5- 4	131
4- 9	114	5- 5	134
4-10	116	5- 6	138
4-11	118	5- 7	142
5- 0	120	5- 8	146
5- 1	122	5- 9	150
5- 2	124	5-10	154
5- 3	127	5-11	157
		6- 0	161

Feet and inches with shoes. Weight with clothes.

Recommended weights for men

		recomme.tueu	weights	or men	
5-	0	126	5- 9		156
5-	1	128	5-10		161
5-	2	130	5-11		166
5-	3	133	6- 0		172
5-	4	136	6- 1		178
5-	5	140	6- 2		184
5-	6	144	6- 3		190
5-	7	148	6- 4		196
5-	8	152	6- 5		201

Feet and inches with shoes. Weight with clothes.

#### ETIOLOGICAL FACTORS

The causes of underweight are numerous and the following classification includes the more important groups:

- A. Contributory causes.
  - 1. Poverty
  - 2. Ignorance, indulgence, fads
  - 3. Poor home habits, such as promiscuous and irregular eating, no breakfast, etc.
- B. Direct causes.
  - 1. Hygiene.
    - a Lack of sleep.
    - b. Overwork.
    - c. Insufficient exercise.
    - d. Inadequate diets.
  - 2. Heredity.
    - a. Constitutionally thin.
    - b. Physical build.
  - 3. Diseases.
    - a. Chronic pyogenic infections.
    - b. Tuberculosis.
    - c. Syphilis.
    - d. Intestinal parasites, ameba.
    - e. Cancer, sarcoma, leukemia.
    - f. Allergy.
  - 4. Endocrine dysfunction.
    - a. Hyperthyroidism.
    - b. Hypothyroidism.
    - c. Adrenal insufficiency.
    - d. Hypoinsulinism, diabetes.
  - 5. Imperfect digestion and absorption.

### THE TREATMENT OF UNDERWEIGHT BY IMPROVING DIGESTION

It is the purpose of this paper to discuss only that phase of the underweight problem which is related to imperfect digestion and absorption. We are not unmindful of the other causes, which we always attempt to correct, and it may be that some of the results which we have obtained should be credited in part to the correction of such things as poor hygiene, specific treatment of diseases, and endocrine treatment where indicated, if available. Carefully planned individualized written diets were arranged for all patients, and some of the credit must be attributed to them. We feel very certain that chronic pyogenic infections play an important part in the underweight of bo h children and adults.

Suppose we have a patient who is seriously underweight, and who has a hypochlorhydria or an achlorhydria with diminished peptic power, or an achylia, together with symptoms of intestinal indigestion. Such a patient is placed on a gaining-in-weight diet, usually beginning with the cooked fruits and vegetables, because cooking seems to make fruits and vegetables more easily digested. If there is any tendency toward loose bowels, the amount of the coarser foods is limited. The acid fruits and fruit juices are served with each meal to compensate for the lack of acid. Two grains of pepsin are given with each meal to make up for the pepsin deficit. One five-grain capsule each of the enteric-coated granules of pancreatin and taka diastase are given after each meal. The patient is then placed under observation, preferably in the hospital, where the total food eaten can be carefully checked, and where minor adjustments can be made as needed.

Many of these underweight patients with the various forms of indigestion have, in the beginning, a diarrhea or frequent loose stools. Sometimes it is necessary to begin with a non-residue diet. One drachm of equal parts of calcium carbonate and bismuth subcarbonate, or one drachm of powdered drop chalk may be given. Calcium carbonate seems to soothe the irritated bowel and slow up the intestinal rate. There are theoretic reasons for assuming that patients who have had constant diarrhea may have a depleted calcium reserve, although the blood calcium is normal, since a rapid intestinal rate would interfere with the absorption of calcium, and the acid urines, which such patients have, would increase the calcium output in the urine. Aub has shown that an increased ammonia output is always associated with an increase in the calcium of the urine. The calcium should help, in proportion to the amount absorbed, to restore the depleted calcium balance. Sometimes a few drops of the tincture of belladonna three times per day helps to lessen bowel irritabliity. When patients are troubled with sleeplessness or hypertension, one-half grain of phenobarbital three times per day seems to help the bowel irritability and sleeplessness, as well as the hypertension.

## THE TREATMENT OF ALLERGY BY IMPROVING DIGESTION.

Allergy is a condition in which various tissues of the body have become sensitized to foreign proteins. It has many clinical manifestations, such as hives or urticaria, vasomotor rhinitis, food eczema, hay-fever, food asthma, bronchial asthma, angioneurotic edema which may involve the intestinal tract as well as external parts, certain types of headaches, joint disturbances simulating chronic arthritis, and serum sickness. Scrum sickness is the simplest form of allergy to explain, since the foreign protein which is associated with the various antitoxins is injected with them. Duke made the interesting observation that

guinea pig, which had been sensitized to egg white, did not experience an anaphylactic shock when egg white was fed. If, however, castor oil were given following the feeding of the egg white, a typical, shock followed. He believed that the castor oil prevented the digestion of the protein molecule, which was absorbed whole or in an incompletely digested state. This experiment led us to believe that food asthma might be due to protein indigestion.

In 1925 a mother brought her son, age 13, to us with an extremely severe case of food asthma complicated by food eczema. The patient had been seen in Boston, where the diagnosis was made. He had temporarily improved when certain foods, to which he had been found sensitive by a skin test, were eliminated from his diet. He was next seen in New York, where a longer list of foods were eliminated, again with only temporary improvement. The Boston and New York lists of offending foods were not the same, since the patient had lost sensitiveness to some of the foods which had been omitted first, but had become sensitive to others. He was then taken to Colorado Springs in the hope that altitude might help the asthma. There he was found sensitive to practically all common foods. California was next sought, but the patient grew steadily worse. He was brought to us for diet advice. His mother stated that, since he was sensitive to all common foods, she was feeding him a mixed diet, asserting that if she omitted all offending foods he would die from starvation. No skin tests were made by us, but on the theory that both his food asthma and food eczema might be due to protein indigestion and subsequent abrorption and sensitization, we gave him the then new enteric-coated pancreatin tablets described above. His improvement was satisfactory. At the present time he is at Harvard University. He still has both asthma and urticaria when he fails to take digestive help.

The success in this case led us to make a careful study of all allergic cases from a digestive standpoint, and to use generously the digestive aids in all such cases, with excellent clinical results as evidenced by general clinical improvement and a decrease to the vanishing point of the skin reactions. The digestive help must be continued over a long period of time. Whenever it is discontinued for a time the allergic symptoms usually recur.

From a theoretical point of view, one might assume that hay-fever might be due to the incomplete digestion of pollens swallowed with the food. A careful study of hay-fever patients usually shows that they have other manifestations of allergy, and

that they improve clinically, as other allergic patients do, with digestive help.

In bronchial asthma, patients are usually sensitive to bacterial proteins. A careful study of these patients also usually reveals that they have other types of allergy to a minor degree. They might become sensitive to the bacterial proteins which they swallow with the secretions from the nose and throat. We have had excellent results by combining indicated digestive help with other forms of standard treatment. In bronchial asthma, we eliminate all possible sources of infection, such as tonsils, dead teeth, and sinus infections. We teach these patients to lead quiet physical lives. We feed limited diets in the beginning and add more food as breathing permits. Occasionally, respiratory vaccines are used. Improvement in such cases is not as rapid as with the foodsensitive cases, but on the whole the digestive aids seem to offer one more therapeutic measure.

In general, in treating allergic patients, all of the standard things are done as usual, except that immunization is not attempted. In the food-sensitive cases, elimination diets are used, considering both the skin tests and clinical trial of suspected foods. In addition to the digestive aids discussed above, bismuth and chalk, or chalk alone, is used to slow up a too rapid intestinal rate, if such a condition exists. Generous amounts of calcium are given by mouth and intravenously. Antispasmodics are employed as needed.

1	Allergie migraine	1	(100%) improved
5	Angioneurotic edema	4	(80%) improved
34	Bronehial asthma	30	(88%) improved
12	Food asthma	11	( $92\%$ ) improved
42	Food eczema	35	(83%) improved
19	Hay-fever	15	(80%) improved
5	Intestinal allergy	5	(100%) improved
1	Joint allergy	1	(100%) improved
11	Loose bowels	11	(100%) improved
54	Normal weight	Wei	ghts stayed constan
29	Overweight	27	(93%) lost weight
197	Underweight	178	( 91%) gained
29	Urticaria or hives	24	(86%) improved
4	Vasomotor rhinitis	3	(75%) improved

In England, Stevens<sup>6</sup> has come to conclusions very similar to ours concernnig the association of other forms of allergy with bronchial asthma. His patients are very frequently sensitive to milk. He says, discussing the treatment, that "digestants are given, such as papain combined with iridin and pepsin; but the preparation which I have found most efficacious is the panteric tablet which dissolves in the alkaline

secretions of the lower bowel; two tablets after each meal, although one is occasionally sufficient."

In further support of the theory that asthma might be due to the absorption of and sensitization to foreign proteins, the Asthmatic Research Council of Great Britain reported "the isolation from the urine of a proteose substance which, when applied to the patient's skin, produced wheals. Injected into the patient from whom it is derived, in doses of one ten-millionth gram, acute attacks of asthma may be induced, whereas large dozes have no effect on an unsensitized person. But proteose from one asthmatic person usually produces no effect in another. After a course of gradually increasing doses of proteose to an asthmatic person, the positive dermal reaction disappears and at the same time he improves clinically. An overdose will produce a severe attack of asthma and aggravate any skin lesion, such as cczema or urticaria."

#### SUMMARY

During the preparation of this paper we have been able to contact 280 of our patients that come under the classification of indigestion, underweight, and allergy. Summarized according to weight, twentynine of the 280 patients studied were overweight, fifty-four were normal weight, and 197 were underweight.

The following chart contains a summary of the results in percentages:

1 4 1 .7 4	(12%) (8%) (17%)	unimproved unimproved unimproved unimproved unimproved	uncooperative uncooperative
2 19 5 1	(9%) (14%)	did not lose did not gain unimproved unimproved	uneooperative uneooperative

In this group there were 152 instances of allergy, of which 129, or 85 per cent, improved; twenty-three, or 15 per cent, did not improve; and nine did not follow the plan outlined. Of the 143 who followed the plan, 129, or 90 per cent, improved, while fourteen, or 10 per cent, did not improve.

Of the 178 patients who reported a gain in weight, 131 told how much weight they had gained. This

gain varied from 1 to 40 pounds, and averaged 12.6 pounds per patient.

#### CONCLUSIONS

- 1. Errors in digestion on an organic basis are fairly common.
- 2. Simple, harmless digestive aids are now available and when used afford worthwhile benefit.
- 3. Chronic underweight may be due to the inability to digest enough food.
- 4. Such patients, when given suitable digestive aids, such as citric acid, pepsin, enteric-coated pancreatin and taka diastase, as indicated, together with an adequate diet, improve in a very satisfactory manner.
- 5. All forms of allergy may be due, in part at least, to the inability to completely digest the complicated protein molecule, the absorption of which may cause sensitization.
- 6. Allergic patients usually improve slowly but surely when given protein digestive aids.

#### CASE REPORTS

#### INDIGESTION—GASTRO-ENTEROSTOMY

Case No. S05699, Mr. H. R., first seen August 5, 1929. Male; age 41; weight, 131 lbs., ideal weight 158 lbs.

Diagnosis: Underweight, indigestion, "neurasthenia," devitalized septum, and devitalized teeth.

History: Life-long history of underweight. Had had two gastric ulcers, five years previous, for which a gastro-enterostomy was done. Patient a high-strung nervous individual, tired easily, and was unable to gain weight.

Examination: Essentially negative except for the underweight, devitalized septum, and dead teeth. Urine negative; hemoglobin 95 per cent; Ewald, 36 free HCl, 45 total acid.

Treatment: Gaining diet with six feedings per day; one capsule pancreatin after each meal and

feeding.

Results: Feb. 1, 1932—Patient reported had rapidly gained in weight up to 155 lbs. Took the capsules for two or three months and felt that they helped him a great deal. Stated he had never felt so well in his life; felt like a new man. No "neurasthenia."

#### UNDERWEIGHT

Case No. H-19485, Mrs. H. B., first seen Aug. 13, 1929. Female: age 53; weight 85 lbs., ideal weight about 120 lbs.

Diagnosis: Underweight, constipation, indigestion, psychasthenia, headaches, vasomotor rhinitis.

History: Patient had never been well, had had numerous backaches, several abdominal operations. Had been confined to bed for 11 weeks prior to coming to the Clinic.

Examination: Aside from underweight and operative scars, physical examination was essentially negative. Blood pressure, 120/70. Urine negative; hemoglobin, 78 per cent; R.B.C., 3,750,000; W.B.C., 8,350; Ewald, 26 free HCl, 52 total acid; stools, negative.

Treatment: Gaining, anti-constipation diet; 2 panteric capsules three times a dev, after food: sodium citrate gr. 20 three times a day, after food. Was also given various types of sedatives together with various forms of physiotherapy.
Results: During a ten-weeks' stay in the hospital,

patient gained in weight from 85 lbs. to 114 lbs. Left hospital improved in every way; sleeping well and very much less nervous. Feb. 22, 1932: Patient still somewhat nervous, as she probably always will be. Weight 113 lbs. Was still conscious of her bowels. Hemoglobin, 86 per cent; R.B.C., 5,000,000; W.B.C., 9,000.

Advised patient to continue with digestive help and to use a drachm of equal parts bismuth and

chalk for abdominal distress.

Case No. H-15952, Mrs. A. E. R., first seen July 24, 1928. Female; age 35; weight normal, 128 pounds.

Diagnosis: Severe urticaria with large wheals covering almost entire body.

History: Life-long history of hives. No family history of allergy.

Examination: Essentially negative. Hemoglobin, 77 per cent; R.B.C., 4,020,000; W.B.C., 6,250; Ewald, free HCl 0, total acid 15; skin test, plusminus to plus to 20 of the 60 proteins used. minus to plus, to 30 of the 60 proteins used.

Treatment: Normal diet; acid fruits and fruit uices; soda baths; calamine lotion; 2 panteric capsules three times a day, after food; calcium lactate,

grains 20, three times a day, after food, grains 20, three times a day, after food.

Results: Patient slowly but steadily improved until urticaria had entirely disappeared. She has experimented a number of times by stopping the pancreatin, but eventually the urticaria always returns. February 26, 1932, patient came into the hospital because of hernes zoster. She had had no hospital because of herpes zoster. She had had no articaria for a long time. Skin tests showed no positive reactions. A test meal was unsuccessfully attempted. Patient has continued to use the panteric capsules and the acid fruits and fruit juices.

#### URTICARIA

Case No. S10149, Master J. A., first seen August 25, 1931. Male; age 14; weight 85 lbs., ideal weight 108 lbs.

Diagnosis: Urticaria, eczema, asthma, under-

History: Life-long history of allergy. Usually better when beans were omitted from diet. Anxious to gain weight.

Examination: Undernourished boy, not acutely ill. Urine, negative; hemoglobin 82 per cent; R.B.C 5,370,000; W.B.C., 4,250; Ewald, 18 free HCl, 28 total acid; skin test positive to 2 foods, kidney beans and wheat; B. M. R. plus 2, and minus 6.

Treatment: Gaining diet; acid fruits and fruit

juices; 2 panteric capsules three times a day, after

Results: Jan. 24, 1932, patient had gained in weight from 85 lbs. to 98 lbs., and had practically no allergy.

#### FOOD ECZEMA

Case No. T-17776, R. C., first seen Sept. 5, 1928. Male; age 2; normal weight.

Diagnosis: Severe acute eczema, bronchial asthma. chronic infected tonsils.

History: A generalized eruption began at 4 months of age, developed very suddenly, and always itched to such an extent that the baby's sleep was seriously interrupted. A change from cow's milk to goat's milk did not benefit the child. Cod liver cil did not seem to help. Ultra-violet light was used with no beneficial results. The constant use of calamine lotion afforded relief. The father had bronchial asthma.

Examination: Male child with a weeping eczematous eruption covering practically the entire body, including the scalp. Tonsils were large and grossly infected, but the father refused permission to remove them.

Treatment: Patient was in the Cottage Hospital

from Sept. 5, 1928, to April 1, 1929. Was given a normal diet low in fat; the contents of one panteric capsule three times a day, after food; soothing lotions, such as calamine or Lassar's paste. The lotions or salves were removed with oil, no soap was

used in bathing the child.

Results: Slow but steady improvement, until the eczema had entirely disappeared. Patient is now six years old; has taken the panteric capsules continuously. Has been seen many times and, aside from an occasional small dry itching spot, he has had no recurrence of his serious eczema. Asthma seems to be cured.

#### FOOD ECZEMA

Case No. S08525, Mrs. W. J. R., first seen June 9, 1931. Female; age 56; weight 132 lbs., ideal weight 131 lbs.

Diagnosis: Food eczema, chronic constipation

spastic colitis.

History: For five years, patient had had attacks of extreme itching in the groins and vulva. At times she had the same skin irritation between the breasts, under the arms, and on right palm of hand. Had been constipated for forty years. Had hives severely when a child.

Examination: Well-nourished adult female. Eczema on examination was limited to hair on groins. Urine negative; hemoglobin 85 per cent; R.B.C., 3,960,000; W.B.C., 6,500; Ewald 50 free HCl, 95

total acid; skin test positive to 26 foods.

Treatment: Semi-aikaline, anti-constipation diet, eliminating the 2 plus and 3 plus foods; 2 panteric capsules three times a day, after food; calcium lac-

tate gr. 10 three times a day, after food.

Results: April 14, 1932, patient said she had been very well, only experiencing an upset occasionally when she discontinued the capsules or violated the diet. Discontinued the capsules about four months prior, when her indigestion returned; resumed the capsules and had had no further trouble Eczema seemed to be cured.

#### ANGIONEUROTIC EDEMA

Case No. H-14955, Mr. J. R. L., first seen March 15, 1928. Male; age 35; weight 180 lbs., ideal weight 150 lbs.

Diagnosis: Angioneurotic edema, overweight. History: Patient had had periodic swelling of the face over a period of seven years. First attack began at two o'clock one morning. The following day, the face and neck began to swell and kept swelling for three days, finally becoming so bad his eyes were entirely closed and he had difficulty in breathing. Was in bed for two weeks. Epinephrine injec-

tions were used. Nine months later, had a similar

attack. When seen by us, was having attacks at intervals of about two months.

Examination: Negative except for overweight. Patient had a soft puffy swelling, especially about the mouth and throat. Skin tests showed reactions to fish, veal, eggs, spinach, and lettuce. Ewald free HCl 3, total acid 20.

Treatment: 1000 calorie reducing diet consisting of 133 grams carbohydrate, 64 grams protein, and 24 grams fat; acid fruits and fruit juices; 2 panteric tablets after each meal and at bed time; sodium bicarbonate, grains 10, three times a day,

after food.

Results: Patient recovered from this attack in about one week. Twenty-six months later, reported no attacks since last seen; weight 161 lbs.; skin tests all frankly negative; Ewald free HCl 28; total acid 36. Gave patient semi-alkaline maintenance diet, with the acid fruits and fruit juices, and advised the panteric capsules in place of the tablets. 1 after each meal and at bed time. June, 1931: patient had had no attacks of angioneurotic edema and was still taking the panteric capsules.

#### ALLERGIC INDIGESTION

Case No. S08617, Master C. S., first seen June 30, 1931. Male; age 5; weight 40 lbs., ideal weight 41 lbs.

Diagnosis: Allergic indigestion, septic tonsils,

pulmonic stenosis.

History: Patient was a premature child, birth weight 4½ lbs., was not breast fed, had Melin's Food for first year. When solid food was started, undigested food appeared in the stools and patient had had difficult digestion ever since. At 2½ years, the glands of the neck were swollen. This was associated with and followed by frequent colds. sillectomy was advised. Patient had always had a tendency to diarrhea. Loss of appetite was always associated with loose bowel movements, as if patient were poisoned.

Examination: Fairly well-nourished child, not acutely ill, but pale and listless. Urine negative; hemoglobin 84 per cent; R.B.C., 4,900,000; W.B.C., 5,000; skin tests negative to all foods that patient

was eating.

Treatment: Normal diet suitable for child 5 years or age, limiting residue-containing foods to 300 grams per day; 1 panteric capsule three times a day, after foods; advised removal of tonsils.

Results: Seven months later, mother wrote tonsils were removed the previous summer and patient in decidedly good health. Digestion greatly improved, and stools normal. Said the digestive capsules were "marvelous." Had given them to the child for two months. Tonsils were not removed until patient had gained in weight and strength.

#### ALLERGIC RHINITIS

Case No. S08461, Mrs. A. P., first seen August 3, 1931. Female; age 65; weight 911/2 lbs., ideal weight 122 lbs.

Diagnosis: Allergic rhinitis, myocardial insufficiency, mitral stenosis, chronic constipation, underweight, enteroptosis, septic tonsils, arthritis.

History: Patient said she had had kidney disease for four years. This was discovered after an attack of influenza complicated by pneumonia, which in turn was followed by heart trouble. Patient had very little energy; had taken many cathartics for stubborn constipation.

Examination: Poorly nourished white female who locked older than her stated age. Heart 61 per cent of the inside diameter of the chest; blood pressure 124/68. Urine contained no albumin, P.S.P. 75 per cent; modified Volhard, 1.016, 1.018, 1.014; Ewald, 37 free HCl. 52 total acid; hemoglobin 86 per cent; R.B.C., 4,550,000; W.B.C., 5,100; skin test positive

to 7 grass pollens.

Treatment: Gaining, anti-constipation diet, beginning with about 2000 calories; 1 capsule each of rancreatin and taka diastase three times a day, after food; because of arthritis, the removal of foci cf infec ion was advised when patient became better; hydrotherapy was advised for the present.

Results: March 22, 1932, patient wrote, present

weight 98 lbs. Took the capsules for several months and felt great benefit. Eventually stopped the taka diastase and continued the pancreatin alone and is now feeling very well. Has no allergic rhinitis, and arthritis is better, although foci of infection not removed.

#### ALLERGIC MIGRAINE

Case No. S06146, Mrs. G. J. B., first seen Dec. 3, 1930. Female; age 37; weight 1571/2, ideal weight

Diagnosis: Allergic migraine, right sacro-iliac strain, obesity, hypothyroidism.

History: Patient had had very severe headaches practically all her life. Backache was fairly severe. Examination: Adult female, somewhat overweight. Blood pressure 110/80. Urine negative; hemoglobin 90 per cent; R.B.C., 4,280,000; W.B.C., 7,800; Ewald, 22 free HCl, 28 total acid; skin test positive to 10 foods; B.M.R. minus 22.5.

Treatment: 800-calorie elimination diet; sodium citrate, gr. 33, three times a day, after food; 1 panteric capsule three times a day, after food; entericcoated thyroid, gr. 2, daily; orthopedic treatment for sacro-iliac strain.

Results: Nov. 10, 1931, patient reported for checkup. Headaches had practically disappeared except when under unusual strain. Had reduced in weight from 157 lbs. to 132 lbs. Had stopped the thyroid when basal rate reached plus 10. Was skin sensitive to only 2 foods. Advised 1/2 grain thyroid after breakfast followed by basal rate later; 1 panteric capsule three times a day, after food.

#### JOINT ALLERGY

Case No. S05803, Mr. L. T., first seen May 9, 1929. Male; age 35; weight 148 lbs., ideal weight 178 lbs.

Diagnosis: Underweight, constipation.

History: Chief complaint was discomfort over stomach. Previous x-rays showed no evidences of stomach or gallbladder pathology.

Examination: Essentially negative except for underweight. Hemoglobin 91 per cent, urine negative; Ewald showed low acid; x-rays showed no pathology in the gallbladder or the gastro-intestinal tract.

Treatment: Gaining diet; 1 panteric capsule three times a day, after food; acid fruits and fruit juices.

Results: Aug. 12, 1931, patient still underweight and had a peculiar type of joint pains. A diagnosis of probable joint allergy was made. Ewald showed 23 free HCl, 36 total acid. Skin test positive to foods, pollens, feathers, and hairs.

Treatment: Advised 2500-calorie elimination gain-

ing diet; 2 panteric capsules, and calcium lactate gr. 10, three times a day, after food; 30 gr. dry citric acid three times a day, after food, in water. Protein-free citric acid was given because patient was sensitive to lemons and grapefruit.

Results: April 2, 1932, patient wrote that he was very much better in every way, had had only one or two mild attacks of swollen joints; was faithfully following diet outlined, taking only panteric capsule after each meal.

#### HAY-FEVER

Case No. S08124, Mrs. E. J. C., first seen June 15, 1931. Female; age 26; weight 122 lbs., ideal weight 140 lbs.

Diagnosis: Hay-fever, hives, chronic constipation,

neurasthenia.

History: Patient had had hay-fever for seven years. Had been skin tested and found sensitive to many foods and pollens. Attempts at immunization had been made without result. Had had indigestion periodically all of her life.

Examination: Fairly well-nourished white female, not acutely ill, but very nervous. Urine negative; hemoglobin 89 per cent; R.B.C., 4,500,000; W.B.C., 4,500; Ewald, 55 free HCl, 77 total acid; B.M.R., minus 4; skin test positive to 36 proteins.

Treatment: Semi-alkaline diet, eliminating the 2 plus and 3 plus foods; 2 panteric capsules three times a day, after food; calcium lactate gr. 10,

three times a day, after food.

Results: Six months later, patient was skin-sensitive to twenty-one foods. Five months after that, was sensitive to twenty-nine foods, thirteen of which were very questionable. At this check-up, aside from occasional attacks of hives and mild hay-fever, was feeling very much better. Advised that since she was improving she continue with the program outlined.

#### HAY-FEVER

Case No. S05087, Mr. R. W. B., first seen Dec. 9, 1929. Male; age 28; weight 123 lbs., ideal weight 141 lbs.

Diagnosis: Hay-fever, asthma, achlorhydria, intestinal indigestion, protein sensitization, underweight, secondary anemia.

History: Patient complained of loose bowel movements and considerable rumbling in the abdomen. Cathartics seemed to give relief although bowels were loose. Had seasonal hay-fever and was sensitive to many foods and pollens. Lost weight when given an elimination diet for the asthma which accompanied his hay-fever.

Examination: Essentially negative except for the underweight. Urine negative; hemoglobin 75 per cent Talquist; Ewald, 0 free HCl, 17 total acid; skin test positive to three foods.

Treatment: Gaining diet; acid fruits and fruit juices; 2 panteric capsules three times a day, after food.

Results: Dec. 14, 1931, patient had gained in weight to 140 lbs., but had recently lost 3½ lbs. Was having no symptoms of hay-fever or asthma; bowels were loose occasionally. Ewald test meal showed 23 free and 40 total acid; hemoglobin 102 per cent; R.B.C., 5,560,000; W.B.C., 6,850. Was advised to continue with normal diet, bulk limited to 500 grams; pancreatin; acid fruits and fruit juices; and a drachm of equal parts bismuth and chalk, three times per day.

#### BRONCHIAL ASTHMA

Case No. S10180, Mrs. F. S. F., first seen Aug. 31, 1931. Female; age 63; weight 153 lbs., ideal weight 126 lbs.

Diagnosis: Bronchial asthma, chronic tonsillitis,

overweight.

History: Patient had had asthma for fourteen years, probably due to upper respiratory infections. Examination: Overweight adult female, not acutely ill. Blocd pressure, 155/90. Tonsils medium sized, pus expressed from both. Urine negative; hemoglobin 86 per cent; R.B.C., 5,400,000; W.B.C., 8,350; Ewald, 28 free HCl, 54 total acid; B.M.R.,

minus 5; skin test positive to six fodos. Treatment: 1000-calorie reducing diet; 2 panteric capsules three times a day, after food; thyroid gr.

1 daily

Results: March 28, 1932, patient gradually lost in weight to 130 lbs. when she felt very well, had no asthma, still taking 2 panteric capsules three times a day, after food, and 1 gr. thyroid daily. Maintenance diet prescribed.

#### BRONCHIAL ASTHMA

Case No. S08602, Master E. S., first seen May 19, 1931. Male; age 7; weight 60 lbs., which was ideal. Diagnosis: Bronchial asthma, acute rhinitis.

History: Patient had had attacks of asthma since

2 years of age.

Examination: Essentially negative except for asthmatic condition. Tonsils had been removed. Urine negative; hemoglobin 87 per cent; R.B.C., 4,460,000; W.B.C., 8,100; skin test positive to fifteen proteins.

Treatment: Semi-alkaline elimination diet; 1 panteric capsule and calcium lactate gr. 10, three times

a day, after food.

Results: Aug. 13, 1931, mother wrote that patient had been free from asthma for three months, when it recurred with a cold. Child now entirely free from asthma.

#### BRONCHIAL ASTHMA

Case No. S07306, Mr. J. B. W., first seen Jan. 15, 1930. Male; age 49; weight 138 lbs., ideal weight 155 lbs.

Diagnosis: Bronchial asthma, constipation, left inguinal hernia.

History: Patient had had asthma for twelve years. Three years ago, had had tonsils removed, which seemed to help a little.

Examination: Essentially negative except for the underweight. Urine negative; skin tests positive to tifty-two foods, pollens, and hairs; Ewald test meals done elsewhere showed normal stomach content.

Treatment: Anti-constipation gaining diet; 2 panteric capsules and sodium citrate gr. 20, three times a day, after meals. Elimination diet impossible in this case because patient was sensitive to so many proteins.

Results: March 2, 1932, patient wrote that, after following plan of treatment for a few weeks, the attacks of asthma suddenly disappeared. Continued the pancreatin for about six months, then stopped it for fifteen months and had no severe attacks, only a little hard breathing or wheezing at times. Last summer, did not feel so well and consulted an asthma specialist who gave him a "liquid medicine" which made him worse. He discontinued this medicine and started the panteric capsules and the sodium citrate again, and was again well in about a month. Has had no attacks since.

#### BRONCHIAL ASTHMA

Case No. S05493, Mrs. E. L., first seen Oct. 17, 1929. Female; age 38; weight 101 lbs., ideal weight 132 lbs.

Diagnosis: Bronchial asthma, deafness.

History: Patient came in complaining of bronchial asthma, underweight, deafness, and a skin rash of urticarial nature.

Examination: Poorly nourished adult female. Urine negative; hemoglobin 100 per cent; R.B.C., 5,100,000; W.B.C., 10,300; Ewald, 18 free HCl, 72 total acid; skin test negative.

Treatment: Patient was given 1500-calorie diet to be increased as asthma improved; 2 panteric capsules three times a day, after food; was advised

to lead a fairly quiet life.

Results: April 1, 1932, patient wrote that she had gained up to normal weight of 132 lbs., could eat anything she pleased, and had no asthma. In the beginning, the rash was stubborn, improving for a time and then breaking out again, but, after a year of the capsules and diet, it entirely disappeared. Is not taking the capsules at present.

#### BRONCHIAL ASTHMA

Case No. S10238, Miss J. L. P., first seen Sept. 14, 1931. Female; age 49; weight 100 lbs., ideal weight 136 lbs.

Diagnosis: Bronchial asthma, underweight,

chronic constipation.

History: Patient had had varying degrees of hives and asthma since childhood. Had been constipated all her life. At no time had she ever weighed over 118 lbs.

Examination: Essentially negative except for underweight. Urine negative; hemoglobin 83 per cent; R.B.C., 4,440,000; W.B.C., 7,400; Ewald, 27 free HCl, 55 total acid; skin tests negative; B.M.R., minus 13 and minus 14; sputum negative for tuberculosis.

Treatment: Gaining, anti-constipation diet; 1 capsule each pancreatin and taka diastase three times a day, after food; thyroid gr. ½ daily; advised ton-

sillectomy.

Results: Jan. 11, 1932, patient had gained in weight to 117 lbs.; constipation cured. Was continuing the diet and medication prescribed and had never felt better in her life. Tonsils had not been removed.

#### BRONCHIAL ASTHMA

Case No. S04392, Mrs. H. R. L., first seen Dec. 31, 1928. Female; age 43; weight 87 lbs., ideal weight 127 lbs.

Diagnosis: Bronchial asthma, underweight,

achlornydria, colitis.

History: Patient had had asthma all of her life except for a period of about eight years. Asthma especially bad during the year prior to her visit to the Clinic. Indigestion began after attack of influenza two years previous, following which she lost in weight from 115 lbs. to 87 lbs. When seen by us was having from five to six loose bowel movements per

Examination: Poorly nourished white female. Urine negative; Ewald, 9 free HCl, 5 total acid; stools contained undigested portions of food and

had offensive odor, also contained fat.

Treatment: Gaining diet with cooked fruits and vegetables, bulk limited to about 400 grams; acid fruits and fruit juices; 2 panteric capsules three

times a day, after food.

Results: Aug. 15, 1930, patient came in complaining of hot flashes. Had gained in weight from 87 lbs. to 115 lbs., and had become constipated. Had continued the acid fruits and fruit juices and took the pancreatin as needed. Had not had a cold or attack of bronchial asthma since leaving the Clinic. Prescribed whole ovary preparation for the climacteric symptoms.

#### BRONCHIAL ASTHMA

Case No. S06333, W. E. E., first seen April 30, 1930. Male; age 62; weight 144 lbs., ideal weight 151 lbs.

Diagnosis: Bronchial asthma, severe food asthma,

myocardial impairment, underweight.

History: Asthma began in December, 1928, and had grown progressively worse, despite all types of treatment under various specialilsts. Was using a German asthma powder, containing aspirin and caffeine, many times a day. Was having severe attacks of asthma two to ten times per night, relieved by 5 to 10 minims of adrenalin. Attacks were not frequent in the day time. Exercise to the extent of watering his lawn would bring on an attack. Tonsils had been removed in 1926. All dead teeth had been removed in 1929. Had no family history of allergy.

Examination: Poorly nourished white male with difficult asthmatic breathing. Heart 44 per cent of width of chest, electrocardiographic tracing showed right ventricular preponderance. Blood pressure, 130/80. Hemoglobin 90 per cent; urine negative; stool contained undigested fat and starch; Ewald, free HCl 22, total acid 35; skin test positive to to-

mato, raspberry, and cantaloupe.

Treatment: 1500-calorie semi-alkaline, anti-constipation diet, to be increased gradually; acid fruits and fruit juices; 2 panteric capsules three times a day, after food, and at bed time; epinephrine and asthmatic powders as needed; patient was instruct-

ed to lead a quiet physical life.

Results: Three and one-half months later, patient reported that he was working daily, weight 144 lbs., using asthmatic powders occasionally but no epinephrin for two months. Cough almost gone. Nov. 28, 1930, patient felt very well, was using no epinephrin. April 10, 1932, weight 155 lbs. Patient continues to take the panteric capsules. Looks well; feels well; asthma attacks practically negligible; now works as hard as he ever did and eats all the food he wants.

#### REFERENCES

- 1. Personal communication.
- 2. Abstract in Chemical Abstracts, p. 1394 (1930) from an original article by E. Ohlsson and

T. Swaetichin in Bull. Soc. Chem. Biol., 11, 333-98 (1929).

- 3. Personal communication, Frederick J. Haskins, Information Bureau, Washington, D. C., January 19, 1932.
- 4. Studies of Calcium and Phosphorus Metabolism XII. The effect of the ingestion of acid-producing substances. Farquharson, Salter, Tibbetts, and Aub, The Journal of Clinical Investigation, Vol. X, No. 2, June 20, 1931.
- 6. Diet and Digestion in Asthma, by William S. Stevens, M.R.C.V.S., The Lancet, March 7, 1931, page 553.
- 7. The Journal of the A.M.A., September 12, 1931, page 789.

#### DISCUSSION

DR. R. O. BROWN (Santa Fe, N. M.): Dr. Sansum's paper has been very interesting indeed. It so happens that I see a fairly large group of boys, ages ranging from 12 to 18, a number of whom have asthmatic trouble, hay-fever, are underweight and somewhat below par, yet without being actually sick. The common history of these boys is that they have passed through the hands of allergic specialists throughout the country and in many cases the results have been very satisfactory. Some improved for a while on restriction of food and then relapsed, while others had gotten no saisfactory results at all and, finally, perhaps as a last resort, they try climate and come to Santa Fe. The effect of climate and altitude on these boys is perfectly remarkable. Many say that altitude and climate have nothing to do with it, yet these cases come out here and do better. A large part of the benefit undoubtedly is due to the careful diet they have been instructed to maintain and to the exercise they get. We find that these boys, unless their residence in this altitude—not necessarily Santa Fe, but somewhere in a high altitude—is maintained over a period of time, are liable to relapse after going to a lower altitude. On the other hand, after staying in this country for from four years up to possibly eight or ten years, they seem to be able to go back home and live in good health.

I enjoyed the paper very much and think that we

can all benefit from it.

DR. C. H. GELLENTHEIN (Valmora, N. M.): I had the privilege this afternoon of reading Dr. Sansum's paper and shall limit my discussion to underweight. When we prescribe a diet for a patient, it is something that he usually cannot appreciate or understand, because people like what they eat and generally always eat what they like. The medical profession today is much indebted to the nutritional men, men of Dr. Sansum's type, who make a serious study of diet therapy. As to underweight, this is an important and common symptom of tuberculosis. Underweight with fever and cough is sufficient for a diagnosis of tuberculosis. The cause of loss in weight is probably due to poisons but other factors must be considered. There is often the increased metabolism due to fever. As tuberculosis is essentially a wasting disease, in order to correct this underweight, we must find the cause and try to remove it rather than to increase the supply of food. It is more sensible to lessen waste than to increase intake. A normal amount of food, with enforcement of rest, will, in the majority of cases, produce a steady gain in weight. I agree with Dr. Sansum that underweight may be due to inability to digest food.

underweight may be due to inability to digest food. DR. HUGH T. JONES (Los Angeles, Calif.): I should like to raise one question, and that is, the effect sunshine may have on allergy in this climate. We are known as the "Sunshine State," but high

altitudes usually have much more sunshine than the lower altitudes. I should like to know Dr. Sansum's experience in cases which come to California and whether they are benefited by sunshine without any other treatment. It may be that sunshine does benefit many of these cases of asthma.

DR. SANSUM (closing): I have very little, if anything, to add, except to thank you for listening to me so patiently. As nearly as I can tell from a survey we have undertaken for this particular meeting, I would say that about one-third of the patients, after they are built up to normal weight, no longer need digestive aids. In many instances, where patients have been well of their allergic conditions and stop taking their digestive aids, the allergic condition recurs. I am sure that sunshine helps everybody. It is too bad we men have to wear so many clothes. We have a very interesting little experiment going on at the Sunshine Cottage now. We are giving children sunshine practically all over their bodies, with benefit in nearly every case.

# THE ASCHHEIM-ZONDEK TEST An Aid in the Differential Diagnosis of Pregnancy.

F. B. SHARP, M. D., and M. C. FLOHR, M. D. (Phoenix, Ariz.)

(Read before the Maricopa County Medical Society.)

Accuracy in the diagnosis of early pregnancy has attained a high degree of probability, but, without a reliable laboratory test, would possibly always be attended by uncertainty in a comparatively small but important group of cases. During the first trimester, there is no absolute physical sign of pregnancy. The palpable qualities of a pregnant uterus may be perfectly imitated by several other conditions. Visible signs and symptoms are only presumptive. Even in the later months of pregnancy, difficulties are occasionally met, although, to the acute observer, they may not be insurmountable. Certainty of diagnosis may, in many cases, wait upon the element of time, but in the important few it is imperative and all important that it be established at once. Matters of social or economic importance may be pressing, or the proper treatment of disease may be immediately imperative; consequently, the aid of the laboratory in the diagnosis of early pregnancy has long been sought.

In the diagnosis of early pregnancy, three names stand out: Hegar, Abderhalden, and, most recently, Aschheim. The names of the latter two are connected with laboratory tests for pregnancy. The original test of Abderhalden for the detection of certain proteolytic ferments in the blood stream of the pregnant woman, was a long step forward. Because of the large incidence of error, it has been given an

importance only slightly above that accorded several others. The laboratory remained ineffectual as an aid to the clinician along this line, until the report of Aschheim, working with Zondek, was published early in 1929.

The work of Zondek and Aschheim has opened a tremendous field for research. It is now demonstrable that a hormone secreted by the anterior hypophysis cerebri may, in sufficient quantity, activate the ovary, causing immature follicles to ripen and corpora lutea to form. Zondek has designated the anterior hypophysis as "the motor of ovarian activity." Stimulation of the anterior pituitary to the production of the hormone in such quantity, is prompted by the trophoblastic increase occasioned by pregnancy, even in its early state. The hormone in varying quantities has been found in the urine of pregnant women as early as one week after the first missed period. This serves as the basis of the now well-known Aschheim-Zondek test for pregnancy, and its several modifications, notably that of Fried-

The modification by Friedman has eliminated most of the disadvantages of the original test and has added several advantages. Apparently, there has been no interference with the reliability of the test in the use of the isolated mature female rabbit instead of immature mice. In fact, the accuracy is probably increased in the clinical laboratory, where the interpretation of the original test might be impaired by the absence of an investigator with the qualifications of an Aschheim, Brouha, Erhardt or Bruhle. Many of the early investigators used mice. Brouha and Hinglais used female guinea pigs, with only one incorrect result in a series of two hundred fifty-one tests. Mathieu and McKinsey employ one immature female rat with a 97.3 per cent instance of accuracy. Although Aschheim and others report a reliability of 98 to 99 per cent for the original test, the necessity for maintaining a large breeding colony of mice, the females of which are satisfactory for the test only for a short time, while weighing between six to eight grams, the necessity for the repeated inoculation of four or five mice, the difficulty of macroscopic examination, the test period of one-hundred hours, and the chances of error in all but the most expert hands, apparently render the test below the Friedman modification in practicability for the clinical laboratory.

In the presentation of their test, Friedman and Lapham rested their method upon three fundamental facts: Primarily, the rabbit does not ovulate spontaneously, so that the ovaries of an isolated unmated female contain neither corpora lutea nor cor-

pora hemorrhagica. This fact has long been known. Second, some substance, or substances, simulating biologically the anterior lobe of the pituitary, are present in the urine of pregnant women. This fact is the keynote of the contribution by Aschheim-Zondek. Third, injections of these substances into the proper rabbit secures a quick rseponse by the formation of corpora lutea and corpora hemorrhagica. The technic of the test is simple. The patient should be instructed to bring to the laboratory a specimen of morning urine. It should be kept cool until the injection can be made. The ovaries of the rabbit may be examined in twenty-four to fortyeight hours. The changes are macroscopic and, in the absence of corpora lutea and corpora hemorrhagica, the test is negative.

Certain characteristics of the Aschheim-Zondek and its modifications must be recognized and observed. Investigators report an accuracy of 98 per cent or over for the Friedman test. The reaction represents a test for the presence of a fully functional placenta or of placental derivatives. It is not necessarily proof of the presence of a fetus, since it is positive when there is retention of portions of the placenta, incomplete abortion, hydatidiform mole and chorionepithelioma. The test remains positive for a few days after parturition or complete abortion, but may be negative in the presence of a degenerating placenta, since that condition is not associated with the production of gonadotrophic hormones. Wilson and Corner have reported a positive reaction in a case of hyperplastic endometritis, which supports the newer concept as to the endocrine factor in the etiology. Ectopic pregnancy gives a positive reaction, according to Frank and Goldberger, except where there has been a tubal abortion or complete degeneration of the ovum from any cause. Mazer and Hoffman report occasional positive reactions, without an existing pregnancy, in cases of compensatory pituitary hyperfunction accompanying ovarian deficiency. One case in our series presented such a difficulty. In the beginning of functional amenorrhea, sterilization by irradiation, and the menopause, and after bilateral oophorectomy, careful interpretation is essential. With proper technic and interpretation, the test promises to be invaluable in the diagnosis of early pregnancy, its complications, and simulating conditions. Among these conditions may be named myoma, recent or incomplete abortion, functional amenorrhea, the menopause, hydatidiform mole, and chorionepithelioma. Since Watkins states that 84 per cent of patients expelling moles recover spontaneously, many may be

spared radical surgery if the hormone test is negative in a few days and remains so. A long-continued positive reaction is significant of retention or recurrence and, under certain conditions, gives warning of malignant degeneration. Hence, as a follow-up of cases of mole or suspected chorionepithelioma, the Aschheim reaction assumes a special role.

Our series of seventy-three cases was begun early in 1931 at the Grunow Memorial, and each case represents urgency in diagnosis, or difficulty by clinical means. The diagnosis as indicated by the reaction has later been checked clinically. A number have not been included, being patients of other physicians. There were fifty-five positive reactions, in which pregnancy or the presence of functional placental elements was clinically proved later in all but one. This patient was a case of ovarian deficiency, as mentioned earlier.

Among the other positive reactions are listed three cases of fibroids and pregnancy, where the diagnosis of the latter was dependent upon the laboratory. Three cases of incomplete abortion, without previous clinical observation, were tested and we believe were benefited by positive diagnosis before curettement. One case of hydatidiform mole and one case of ectopic pregnancy are included in the group.

There were eighteen negative reactions, and these make up an interesting group, as the evidence against pregnancy was a relief to the patient in many cases and more often a help to us in the differential diagnosis of pelvic pathology. All these patients gave a history of one or more missed periods and exposure to pregnancy. Several had enlargement of the uterus from some cause, and accompanying adnexal disease in a few. Classified, the principal lesion was as follows: Fibroid, two cases; bilateral ovarian disease, cysts, etc., six cases; chocolate cyst of one ovary with enlargement of the uterus, one case; salpingitis and oophoritis resulting in total destruction of the ovary, one case. In this patient the clinical picture closely resembled that of a left tubal pregnancy. One case of pernicious anemia with amenorrhea gave, of course, a negative reaction. One case is listed as endocrine but without available clinical record. There were two cases of functional amenorrhea. The records of the other four are not available at this writing.

In conclusion, the Friedman modification of the Aschheim-Zondek test apparently lends itself to clinical laboratory technic. Familiarity with its use and a knowledge of its interpretation should keep it among the most reliable of biologic tests. In this series, we feel that there was a 98.7 per cent accur-

acy, and our failure to recognize clinically the one case in error was not the fault of the test as we now know it. Correlation of the history and physical findings with the laboratory, should make errors infrequent.

It is interesting to review in our minds the possibilities of the Aschheim-Zondek in chorionepithelioma. Evidence indicates that the inter-reaction is a triangular one, the trophoblastic increase being first responsible for the pituitary reaction. The latter calling forth the ovarian response, explains the abnormally long positive Aschheim-Zondek after the condition is demonstrated in cases which subsequently recover. The test is made a quantitative one by Zondek, who detoxicates with ether small pieces of suspected chorionepithelioma and implants into an animal. If a positive II or III is obtained with 1/80 to 1 100 cc. a diagnosis can be made with certainty. It is known that such cases have a higher concentration of hormone in the urine than normal pregnancy, and in the pathological tissue itself, so that the quantitative reaction is diagnostic. Larger amounts of decidua and normal placenta will give a positive reaction. Normal tissue never does, and carcinoma only when large pieces are repeatedly implanted. One writer has suggested that the door opened by the work of Aschheim-Zondek may eventually reveal hitherto undiscovered facts concerning all neoplastic growth.

#### CASE REPORT:

An Unusual Accident Occurring During Cystoscopic Aspiration of Enormous Hydronephrosis and Hydroureterosis.

#### A. W. MULTHAUF, M. D.

(Presented before El Paso County Medical Society, May 23, 1932.)

In reviewing the available literature on hand, I find no record of a case that presents a similar picture. I shall present this case on account of its unusual aspects and also its past history.

The patient is a white female, age 41, whose entrance complaint was kidney trouble.

P. H.: Complaint of pain on the right side dates back to childhood. Ovarian operation 12 years ago, appendectomy, gallbladder operation 9 years ago, an operation for adhesions 6 years ago. The above operations were all intended to relieve the pain on the right side. Menstrual history: Periods regular. Have not been associated with pains in the right side. Duration, three days. Flow is moderate. G. U.: No symptoms referable to the back. No nocturia, no

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hematuria, no stones or gravel. No frequency or burning. G. I.: Appetite good. Bowels, normal. Weight now is better than ever before.

P. I.: Patient states that she has had pain in the right side ever since childhood. About four years ago a local physician made a diagnosis of right kidney trouble, from physical examination and urinalysis. There was no cystoscopy at that time. She has never had attacks of chills and fever or bladder irritation. Uroselectan examination gave no positive findings as to the nature of the disease.

Examination: Patient is a fairly well-developed, well-nourished white female. Pulse, 82. Temperature, 98.6°. Blood pressure, 124/80. Head: Eyes react to light and accommodation. Pupils equal and regular. Mouth: Teeth in excellent condition. Pharynx appears normal. Neck: No thyroid enlargement. No cervical adenopathy. Chest: Heart and lungs negative. Abdomen: There is a scar in the midline and in the right rectus from a previous operation. No palpable tumor masses. A definite rigidity is noted all along the right rectus muscle from the midline up. On account of discomfort, deep palpation is impossible. No mass can, however, be outlined. External genitals: negative. Catheterized specimen of urine obtained for study shows microscopically a large amount of pus and B. coli on cultures. Total P. S. P.: 30 minutes, amount 320 cc., 28 per cent. Cystoscopic examination: Cystoscope passed under butyn anesthesia. Several ounces of cloudy urine evacuated. Inspection of the bladder revealed a low-grade cystitis. The ureteral orifices are in normal position. The right ureteral orifice presents a halo of inflammatory reaction about it. There are no stones, no tumors, diverticulae nor trabeculations noted. The vesical neck is negative. No. 6 x-ray catheters passed up to each kidney with ease and without meeting obstruction. Specimens collected for microscopic study. One's attention was immediately called to the flow that occurred from the catheter in the right ureter. The drip was continuous and the urine very cloudy in appearance. A needle was attached to the catheter and the contents from the right kidney were aspirated; 850 cubic centimeters of purulent urine were obtained. Differential P.S.P. Rt: no appearance of dye in 20 min. Left: App. time, 3 minutes. 15 per cent in 15 minutes. Kidney Specimens. Right: Large amount of pus. Culture: B. coli. Left: Epithelial cells; no pus. Culture: sterile. Bladder: large amount of pus. Culture: B. coli. A pyelogram was also made.

On account of the previous operations, all of which were advised to give relief, the patient was in no mood to listen to suggestion of surgery at the present time. She said that if we could do something of a more conservative nature for relief, she would appreciate it very much. We consequently advised her to return to the office twice a week to have a cystoscopic treatment of the right kidney, which consisted in aspiration, and lavage with an antiseptic solution. These treatments have afforded her a great deal of relief and the amount aspirated has gradually gone down from 850 cc. until, today, only 250 cc. were aspirated.

Three weeks ago, after the usual cystoscopic treatment, which consisted in the passage of a Braasch bulb catheter to the kidney, after the aspiration had been completed and the kidney lavaged, an attempt to withdraw the catheter met with a definite resistance. Upon exhausting all the gentler manipulations, considerable tension was applied to the catheter. which finally was withdrawn with a knot in it. There was a slight hemorrhage following this, which disappeared within several hours.

It can easily be seen how an accident of this sort could occur when the catheter is introduced for its full length into apparently just a large cystic sac whose known capacity was 850 cc. The catheter apparently doubled upon itself, forming a loose knot, which was drawn taut when the catheter was withdrawn.

As to the cause of the hydronephrosis. we feel that, in this particular instance, it was a congenital anomaly, because definite indications of pain on the right side can be elicited from childhood on.

# GOOD SAMARITAN HOSPITAL Phoenix, Arizona.

#### REPORT OF DEATHS FOR APRIL, 1932

During the month of April, 1932, eight deaths occurred in this hospital. Postmortem examinations were carried out in three cases, thus making an autopsy percentage of 37.5.

I am happy to state that, on the whole, the case reports were very satisfactory. The histories of present illness were rather scanty, and the physical examinations somewhat perfunctory. However, progress notes were brief, to the point, and usually conveyed the information for which they were intended.

Case No. 13864 was that of a white American female, 38 years of age. Three years ago she was operated upon for carcinoma and, according to the husband's statement, a short length of the small bowel was removed. Microscopic examination of the tissue removed failed to confirm the surgeon's diagnosis. Two years following the operation and eight months prior to admission, the patient began to suffer from attacks of partial obstruction. Nine days prior to admission, the patient was quite suddenly seized by colicky pains, obstipation, and vomiting. Enemas produced no result and the patient became progressively worse. Upon entrance to the hospital, she was rather toxic, with a temperature of 99.6°, a pulse rate of 110. with a distended, tender abdomen with visible peristaltic waves. Upon rectal examination, a hard globular mass was felt a finger's length up in the rectum. Upon operation, the ascending transverse and descending colons were greatly distended. A hard annular carcinoma was found at the recto-sigmoid junction. No record is made of removal of tissue for microscopic examination. A colostomy was performed but no fecal matter appeared at the colostomy opening, and the patient died five days following entrance to hospital. It was the impression of one of the attending physicians that the failure to drain was due to paralysis of the intestine, which had been distended for nine days.

Case No. 13918 was that of a white woman, fifty years of age, who had tried unsuccessfully to treat her hypertension with Mary Baker Eddy's "Key to the Scriptures." The amount and frequency of these specific doses was not stated—at any rate the patient was brought to the hospital in a comatose condition, suffering from a cerebral hemorrhage on the left side. The blood pressure was 220/110 and the physical findings were characteristic of the cerebral accident. She improved slightly, but died five days following entrance.

Case No. 13882 was that of a six-weeks-old, premature baby, who had suffered from distention since birth. Five days prior to admission, the baby became distended and cyanotic. The distention was not relieved by enemas. Upon examination the child showed an otitis media, was jaundiced, and had an exceedingly distended abdomen. The diagnosis given in the history was Hirschsprung's disease and otitis media. In spite of heroic treatment the baby failed rapidly and died within twenty-four hours following admission. The final diagnosis was icterus gravis and acute distention. The scanty history does not give the reviewer an adequate picture of this patient, and the exact cause of death is not clearly stated.

Case No. 13471 was that of a twenty-seven-yearold Mexican housewife who entered the hospital on April 14, complaining of pain in the right side, nausea and vomiting, and constipation. It was impossible to obtain a history on account of language difficulties. The patient had been vomiting fecal matter for 24 hours, and examination of the abdomen showed tenderness in the right lower quadrant. Upon operation it was found that 6 inches of the small intestine was telescoped into itself just above and through the ileocecal valve. This could not be reached until the ileocecal valve was opened. An entero-enterostomy was done and the patient returned to the ward in fair condition. A fecal fistula developed and a re-operation was carried out seven days later. A mass of adhesions above the cecum, with a pelvic abscess, was disclosed. There was a hole in the intestine above the ileocecal valve, due to a slough. The hole in the bowel was closed and an entero-colostomy was done, with a Murphy button. Following the operation, there was profuse drainage from the operative wound, and the patient appeared better. She took nourishment freely but gradually became more emaciated and died on April 30. An autopsy disclosed that there was an obstruction of the ileum near the cecum, due to papilloma, and gangrene of the distal ileum and cecum. The union of the ileum and transverse colon was intact without evident leakage. The anatomic diagnosis was obstruction of ileum near the cecum, due to papilloma.

Case No. 13514 was that of a forty-seven-year-old American woman who entered the hospital on February 19 with a diagnosis of tuberculosis of the right kidney. Specimen of urine from the right ureter showed tuberculosis bacilli, and a pyelogram of the kidney revealed the characteristic findings of tuberculosis. On February 29 the right kidney was removed and showed an inflammatory process of tuberculous origin. The patient was given blood transfusions on March 30 and April 3. On April 8 she began to develop meningeal irritation. Spinal puncture was refused, patient developed the usual signs of meningitis and expired on April 10. A diagnosis of terminal tuberculous meningitis was made.

Case No. 13838 was that of a twenty-six-year-old American woman who entered the hospital on April 14, with a right lobar pneumonia. The usual treatment for pneumonia was carried out, but the patient died six days after entering the hospital. A postmortem showed a lobar pneumonia and chronic glomerular nephritis.

Case No. 13866 was that of a forty-three-year-old American male who entered the hospital on April 7 in a comatose condition, with an axillary temperature of 100.2° degrees, a pulse of 100 and respiration 30. A history given by a member of his family states that three weeks prior to admission the patient began to complain of being extremely tired. He developed a shuffling gait and ataxia. There were transient periods of loss of memory. Twelve days prior to admission he became comatose, following which it was impossible to arouse him. Physical examination showed a loss of muscle tone of the extremities, although the reflexes were normal. A second physical examination carried out by a consultant was essentially the same, except that a sign of Babinski was lacking and the abdominal reflexes were absent. Examination of the urine and blood was essentially normal; the spinal fluid showed four cells; the blood and spinal-fluid Wassermann were negative. The temperature and pulse rates gradually increased to 106° and 150 respectively and the patient died on the fourth day following admission. After a postmortem examination, the following anatomic diagnosis was made: passive hyperemia both lower lobes; hypostatic pneumonia; dilated right heart; chronic glomerular nephritis. Probable diagnosis of encephalitis based on clinical findings and gross autopsy changes. Final diagnosis made was encephalitis, followed by large question mark. After reading the case, it is apparent that the word encephalitis should be followed by a succession of exceedingly large question marks.

Case No. 13889, a male whose age and nationality are not stated, was brought to the hospital on April 12, in an unconscious condition following a motor-car accident. Aside from lacerations of the left face, the examination was negative except for sluggish patellar reflexes. The blood pressure was 120/70; pulse 80. The x-ray examination showed a fracture at the base of the skull. Four hours later the blood pressure had risen to 180/100 and pulse to 144; respiration almost ceased. A spinal puncture revealed a bloody fluid, and the patient died a short time later.

This case brings up the interesting subject of

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spinal puncture in intracranial injuries. It is not intended that these comments are a criticism of the treatment in this case. Since the advent of the motor car, the incidence of intracranial injury has been tremendous. It is now necessary that every general practitioner be acquainted with some of the rudiments of neurological surgery. It would seem desirable that the Arizona State Medical Association, through a committee of surgeons, should formulate certain rules or outlines to guide the general practitioner in his treatment of these conditions. A casual perusal of the literature would convince even a non-surgeon that far too many procedures are carried out upon the average case of intracranial injury. Routine lumbar punctures are to be condemned. It is almost impossible to do a lumbar puncture upon a normal individual without producing headache. The headache is due to cerebral injury. The injury probably occurs because the brain is thrust against the sides of the skull. If a lumbar puncture is done in the presence of increased cranial pressure, the resultant trauma will be proportionally greater. It is true that the patient may improve immediately after the lumber puncture, but it is only temporary. If the hemorrhage is in the posterior cranial fossa the patient will probably be made worse instant'y, owing to injury of the medul-

In the presence of extradural hemorrhage, the release of pressure promotes further bleeding. It is, therefore, advisable that a patient be studied thoroughly by the old-fashioned method of observation before subjecting him to x-ray examinations, lumbar punctures, and protrac ed physical examinations. If I were brought to the average small town hospital with an intracranial injury, I should prefer to be left strictly alone, for, as Dandy has reiterated, about 70 per cent of intracranial injuries will recover if left strictly alone; about 20 per cent will be lost with the utmost available efforts because the injuries are so severe. About 10 per cent of the cases that would be lost if left alone can be saved by well-timed and well-directed operative treatment. The state of consciousness gives us the most delicate indications of intracranial pressure. If the unconsciousness deepens during the first five or six hours following admission, one knows that the pressure is increasing and that surgical intervention must be considered. If consciousness is returning, it indicates that carebral pressure is being reduced and that the patient is improving.

Vacillations in the pulse rate indicate an impending break in compensation. Irregularities indicate the same condition. An increase in the temperature also indicates a rise of the intracranial pressure. Blood pressure records are of little value. Restlessness means either that the patient is coming out of coma or going into it. Restlessness should never be submerged by morphine, for our most valuable sign would be masked.

As has been previously stated, Dandy believes that operation is indicated in less than 10 per cent of the cases. When, after a period of six to eight hours, the patient shows deepening coma, cessation of restlessness, vacillation of pulse, tachycardia, increasing respiration, then surgical intervention is indicated. If a patient is going to die from injuries of the brain in less than five or six hours, excepting extradural hemorrhage, there is nothing that one can do to prevent it—there is no point in operating upon a patient with such a high degree of intracranial pressure.

Marked individuality must be displayed in the treatment of cases of head injury. It is well to remember that 70 per cent of the cases will recover if nothing is done. It is well to consider this fact before hastily advising operative procedure. One should be sure that treatment will confer some benefit upon the patient and not result in additional harm.

ROBERT STANLEY FLINN, M. D.

#### REVIEW OF DEATHS FOR MAY, 1932

There were twelve deaths during the month of May and four autopsies obtained. One of these deaths occurred after the patient had left the hospital, but is reported, inasmuch as an autopsy was secured.

Case No. 13708: Gunshot wound of head. Entered the hospital on the 4th of March, was discharged from the hospital, improved, on the 31st of March, and died April 28. At the time of admission, hair was matted with blood and about an ounce of cerebral tissue. There was a puncture wound (gunshot) of the right temporal region just above the hair line, nearly anterior to the forehead. Marked ecchymosis of right upper eyelid; eye swollen shut. Left eye was normal. Pupils reacted to light, normal in size and shape. Left cheek markedly swollen but no discoloration. Nose and mouth negative. Ears showed no fresh Throat revealed some fresh blood. X-ray report as follows: "There is shown bullet wound on the right side of the skull through the lateral aspect of the frontal bone about 1 inch above the floor of the anterior fossa. From the small fragments of bullet, the track of this missile can be traced inward and downward, the larger portion of the bullet having lodged in the superior maxilla on the left side at about the level of the floor of the antrum. One rather large fragment of bullet is shown at the level of the floor of the anterior fossa on the right side."

At the time of discharge from the hospital a final progress note was made as follows: "Wounds on thighs healed. Wound of right frontal region of head healing well. Still some swelling of left maxillary region with marked tenderness over zygomatic area. Both orbital regions still swollen and discolored. Right eye—pupil fully dilated; no reaction to light or accommodation. No voluntary control of movement of right ey ball. No vision in right eye (according to patient). Right eye thus seems to show severance of right optic and trochlear nerves as well as oculomotor, or else pressure from bullet fragments or hemorrhage is causing the

paralysis. The left eye is apparently normal. Pupil reacts to light and accommodation. Patient is still unable to open jaws completely. Apparently no impairment of motor nerve function elsewhere."

Autopsy performed May 2, 1932: Examination revealed female of about thirty years of age. Examination was limited to cranium and revealed point of entrance of bullet about 11/2 inches above the right external auditory meatus and about 11/4 inches anterior to the same. At this point between the dura and the skull is an old organized abscess containing several fragments of bone and with brain substance adherent to the skull through a hole in the dura. The track of the bullet could be traced from this point of entrance downward and forward into the left maxillary sinus, making a groove on the right sphenoidal ridge and passing through the cribriform plate. Surface of the bone showed purulent meningitis of chronic form with evident organization. Right frontal lobe showed softening as evidence of chronic encephalitis. evidence of recent hemorrhage was found.

Cause of death: Purulent meningitis and encephalitis.

Case No. 14043: Entered hospital May 5th and died May 6th. Diagnosis: Acute cardiac decompensation, arteriosclerotic and mitral insufficiency, auricular fibrillation.

This man was found by the roadside unconscious and remained unconscious until the hour of his death. Autopsy findings were those of arteriosclerotic and passive congestive changes. Death was due to acute cardiac decempensation.

Case No. 14061: Patient entered the hospital on the 8th of May and died on the 14th. The clinical diagnosis in this case was cardiac decompensation; auricular fibrillation. The anatomic diagnosis: hypertrophic heart with dilatation and incompetent tricuspid valve; multiple infarcts in both lungs; extensive atelectasis of right lung; sub-acute adhesive pericarditis; right hydrothorax; cirrhosis of the liver; chronic glomerular nephritis; chronic cystic colloid goiter. It would certainly seem that this patient had enough things wrong with him to cause his death and there are no comments regarding the treatment.

Case No. 14164: entered the hospital on May 23d and died May 25th. The clinical diagnosis was diarrhea, undetermined; possible malignancy. This man was 68 years old and had had a severe diarrhea for about a week prior to admission to the hospital. He was in an extremely critical condition on admission, due to marked dehydration. Fluids were forced, together with glucose, without improvement. The autopsy was confined to the abdomen and the anatomic diagnosis was gastro enteritis, dehydration and inanition.

Case No. 14111: entered the hospital May 15th and died May 25th. The clinical diagnosis was chronic obstipation; possible malignancy; chronic myocarditis. Autopsy findings were of a generalized carcinomatosis with primary growth in the prostate; hydronephrosis of right kidney; dilatation

of mitral and tricuspid valves of the heart, due to the sclerotic changes.

Case No. 14155 entered the hospital May 21st and died May 29th. Diagnosis: Multiple fistulae connecting bowel and skin, bowel and uterus, bowel and bladder; metrorrhagia, general peritonitis; abdominal adhesions. A hysterectomy, adhesiolysis and repair of fistula were done in this case.

The history in this case is of marked interest and is therefore presented. Uterine hemorrhage, duration five weeks, one of several attacks. Fecal drainage per sinuses abdominal existing six years. Severe cystitis, duration 5½ years.

P. H. Usual childhood diseases. Patient was undernourished and not very strong as a child. At the onset of menstruation she complained of pain in left lower quadrant, which persisted until 1927. Health was fairly good following the age of twelve, with the exception of influenza in 1917 and 1920. Menses began at the age of twelve, 24 to 28 day interval. Periods very painful with profuse flow. Married 1924; one full term pregnancy with no complications. Has had some vaginal discharge.

P. I. Patient dates her present illness from the onset of menstruation at the age of twelve, which was accompanied by pain in the left lower quadrant. This persisted until 1920, when Dr. Newell removed the tube and ovary. Patient was relieved for about one year following operation and then symptoms of pain, fever, vomiting and profuse menstruation returned. In 1923, patient had a hemoptysis of bright red blood and was diagnosed at that time as having pulmonary tuberculosis. Following three years of rest in Arizona, patient returned home and her health was improved. One year later, there were symptoms of pain in left lower quadrant, high temperature, vomiting, general prostration; and fluid in the abdomen was noticed. On July 14, 1926, patient had a pelvic operation and thinks a tuberculous tube was removed. Has been draining pus from wound ever since. On March 14, 1927, she was operated on again to close the abdominal sinus. Five days after the operation, fecal material began to discharge through the fistula. After removal of the retention catheter, which had been in place for three weeks following the operation, urine began to discharge through the fisutla. Since then two other fistulas have opened on the abdominal wall.

Case No. 14030: The patient entered the hospital May 3d, and was delivered of twins. One baby died May 3d, the other May 7th. Both were premature.

Case No. 13976: Patient entered the hospital April 24th and died May 2d. This man was irrational and history could not be obtained. He was markedly undernourished and in very poor condition at the time of admission. X-ray of the gastro-intestinal tract: "The stomach was spherical in shape and showed a constant ragged pyloric deformity, strongly suggestive of malignancy. About 25 per cent of the barium mass remained in the stomach after 24 hours. The enlarged prostate made it almost impossible to introduce the rectal tube to outline the colon." The clinical diagnosis in this case

was malignancy of the stomach; hypertrophy of the prostate.

Case No. 13967: Entered the hospital April 23rd and died May 2d. This was a case of intestinal obstruction due to adhesions. An enterostomy was first done, which resulted in marked improvement. Three days later the loop of bowel where the enterostomy was done was removed, a lateral anastomosis was done, and adhesions causing the obstruction were freed. The patient seemed markedly improved the following day, but died two days after the second operation, apparently from a circulatory collapse.

Case No. 14060: Baby 5 months old entered hospital May 8th and died the same day. Diagnosis: intussusception. Operation: "Upon opening the abdomen a large amount of thin fluid was encoun(Continued on page 480)

#### CASE REPORTS

EL PASO CITY COUNTY HOSPITAL El Paso, Texas, May 18, 1932

Case presented by DR. JOHN HARDY. The patient, female, Negro, age 18 months, entered hospital April 10, 1932. Previous history irrelevant. The mother stated that at about 5:30 in the afternoon the child fell from her arms, striking its head on the floor. It cried for quite a while and then slept for about half an hour and woke up, and she noticed a twitching first in the hand. It soon became generalized over the right side and she brought the child to the hospital, where I saw it soon after. Before I got to the hospital, however, Dr. Rodarte had performed a spinal puncture and obtained a clear fluid under pressure. He reported it to me when he phoned and, as our agreement was, he did not repeat this tap. The picture was one of extradural hemorrhage. When I saw the child, the convulsions were general over the right side, and I told the mother what I thought was the matter with the child and offered operation, which was finally accepted. The child was quieter when it came to the operating room, but the convulsions had extended to the left foot. The baby was anesthetized very carefully by Dr. Vestal and I operated, thinking that the lesion was that of the anterior branch of the middle meningeal. About the time that the decompression was completed, the child died. We found some extradural clot but not nearly enough to account for the symptoms.

Autopsy Diagnosis: Status thymico-lymphaticus. Discussion by DR. J. LEIGHTON GREEN: Nothing much is known about such cases as this and so it is hard to discuss. Parker and Ridening advance the theory that the chromocells show a hyperplasia of the lymphoid elements. In a typical case of status thymico-lymphaticus, the cervical and tracheobronchial mesenteric glands are enlarged. The Peyer's patches are much larger than normal. In other words, there is an enlargement of all the lymphoid structures of the body. It is not recognizable except at autopsy. The x-ray may show

an enlarged thymus, but this is not necessarily proof of status thymico-lymphaticus. We usually think of it in children, but it does occur in adults. Those people prone to Addison's disease show the same findings as those who save status thymico-lymphaticus, and it is believed, therefore, that the disease in the infant will show itself in the adult as Addison's disease. We know that those people are susceptible to trauma, anesthesia, etc., and are more apt to have convulsions than the normal child. However, the condition can not be diagnosed ordinarily before autopsy.

DR. J. MOTT RAWLINGS: All the symptoms that Dr. Green describes were found at autopsy, there was no edema of the brain and no extradural and intradural clot, so the diagnosis made was status thymico-lymphaticus.

Case presented by DR. W. R. JAMIESON. The patient, male, American, age 41, was admitted March 5, and died April 6, 1932. Admission diagnosis: stone in left ureter. Chief complaint was pain in left lumbar region. History was that, ten days prior to admission, he became sick with "flu," cough, fever, body aching, etc. Went to bed and stayed there. Six days later he started having pain in left lumbar region, about three inches above crest of ilium. Pain radiated a short distance downward and was worse when he sat up or turned over on his left side. Had no attacks of acute pain, no chills, no frequency, nocturia, or dysuria, no hematuria. Past history was not obtained.

Examination was negative except for amputation of right upper thigh, slight distention of abdomen, pressure on right side of which caused pain on left, large firm mass in left lumbar region extending up under costal margin and very tender to pressure. Blood pressure 108/72. Temperature on admission 102.4; pulse, 104; respirations, 22. Urine: orange amber, very cloudy, alkaline, 1.020, one plus albumin, no casts, a few pus cells (3/6). Blood: Hb. 75; R. B. C. 5,610,000; W. B. C., 12,400; polys., 74 per cent, Kolmer anti-complementary (3/11).

Course: On March 7, the patient was cystoscoped. Right catheter passed into ureter fairly easily. During the cystoscopic, a fairly large amount of pus was seen issuing from the left ureter. Left ureter evidently was obstructed by what was thuoght to be a stone, and catheter was passed only about one and a half inches. On the 11th, he was again cystoscoped and right ureter was catheterized. One cc. of P. S. P. was given intravenously. The dye appeared in about three and a half minutes. A tenminute specimen of urine showed 10 per cent of the dye. Urine from right kidney showed one plus albumin and no casts or pus cells.

An x-ray dated March 11 showed "a large calculus filling the left kidney, with a rather huge mass on this side occupying the site of the renal organ. In addition to the large opaque mass opposite the second lumbar region on the left, there are numerous smaller dense calcified masses directly beneath the last floating rib of this same side and op-

posite the lower border of the third lumbar vertebra. Several smaller more or less irregular areas of a similar character are found midway between the last mentioned mass and the vertebral column. On the right side, what appears to be a possible stone is seen just beneath the floating rib about an inch proximal to its end. Gas masses make it difficult to identify structures. There is marked sclerosis of the vessels of the right side, with calcification of the walls of said vessels. No stones are seen in the bladder. Impression: Nephrolithiasis, left perinephritic abscess.'

On March 14, patient was operated. A large amount of perinephritic pus was evacuated and an enormously enlarged kidney was incised and explored and two walled-off pus pockets evacuated. The patient's general condition precluded any further measures, so drains were inserted and wound closed.

The patient left the table in poor condition, but rallied and did fairly well under treatment for a couple of weeks. Then he lost ground rapidly and succumbed on the twenty-third postoperative day (Apr. 6). His urine on the 28th of March showed four plus albumin and innumerable pus cells: and his blood on April 1 showed 20,200 w.b.c. His temp. curve before operation was typically a septic one, from normal to 102°. Following operation it ran around normal to 100° for the first week and then started shooting up to 101° and 102.5° and 106° on April 4th, with intermissions to normal occasionally. On March 30, dressings from wound showed fecal matter, which continued. Gradually he went from bad to worse and died Apr. 6.

The autopsy showed the following findings:

Heart: The heart is removed and opened following the course of blood stream. Nothing of unusual note is found: the valves are intact, the musculature is good, no thrombi or vegetations are encountered.

The left lung is markedly at electatic in some areas and emphysematous in others. The adhesions covering this lung resemble those occurring in a tuberculous pleurisy.

The right lung is striking for the occurrence of a lobar pneumonia completely filling the right lower lobe. This pneumonic process is complete, involving every portion of this right lower lobe, and is in the state of the so-called gray hepatization. There is a purulent secretion coming from the bronchi of this lower lobe. The upper lobe is air-containing.

The liver is slightly fatty in type.

The gallbladder contains a thickened inspissated material. The gallbladder is large and dilated, and numerous adhesions pass from its outer surface to the adjacent hepatic loop of the colon and to the duodenum.

The pancreas is normal.

The spleen is very large and swollen, being from five to six times normal size, and shows the presence of an acute splenic tumor of marked degree.

The bowels are essentially normal, with the exception of the descending colon. Here, when it is

loosened from the adjacent tissues underlying it, which are markedly infiltrated with inflammatory reaction, we are at once struck by the fact that an ulcer has occurred between the bowel wall and the underlying tissues, and that there is direct communication between this loop of the colon and the retroperitoneal area. This latter area is now examined by moving forward the kidney mass with its adjacent tissues. In so doing, we find that there is an extensive area of gangrene of the body wall which extends from the level of the lower edge of the spleen as far as Poupart's ligament. It involves the iliopsoas muscle on this left side, the muscle undergoing complete necrosis and disintegration as a result. The gangrene has not extended over the anterior abdominal wall, but limits itself to the lateral wall margin.

The left kidney is next examined, found to be incased in a great pad of thickened perirenal fat. The ureter leading from it is dilated, thin walled and necrotic. The kidney is again examined and found to contain a large calculus  $3\frac{1}{2}$  by  $4\frac{1}{2}$  cm., rather friable and easily broken, with numerous smaller calculi in other calices. The main calculus is in the lower pelvis. All the pelves show erosion and invasion of their substance by an acute process, while the cortical substance of the kidney itself is largely destroyed by this invasion.

The right kidney shows some infiltration with perirenal fat, but there is no abscess present and one finds on opening the kidney only a small amount of granular detritis and debris. The ureter is a little dilated.

The bladder shows a beginning necrosis of its lining wall.

The aorta shows nothing of unusual note.

Summary: We are dealing in this case with a marked grade of renal calculus, with ulceration, perinephritic abscess, gangrene of the body parts from the extensive abscess and resultant terminal ulceration into the wall of the descending colon at a point just below the splenic flexure. There is also a terminal extensive lobar pneumonia of the right lower lobe.

There are three important pathological conditions in this case; namely: stone in the kidney pelvis and calyx, multiple abscesses of the kidney substance, and perinephritic abscess.

The causation of renal lithiasis is still a matter of speculation. Several theories have been advanced, but none satisfactorily proved. The one that is the most tenable is that of the colloids which hold the crystalline elements in super-saturated solution. That this must be so, is evident from the fact that uric acid, a constant constituent of urine, is soluble in 1-16000 parts of cold water, and as the amount excreted is ten times as much, at least, as could be dissolved in the amount of urine passed daily, it is evident that there must be some constituent in the urine to accomplish this solution. If some change takes place in these colloids, such as coagulation, they lose their power of holding the crystalline elements in solution and form the nucleus of a frame-

work upon which these crystalloids are deposited. However, that this may occur there must be a suitable surface upon which the alternate deposition of crystalloids and colloids may take place.

It was noted during the World War that there is a definite relation between stone formation in the kidney and suppurative lesions of the bones. Stagnation following renal and ureteral anomalies, favors calculus formation. One would think that the passage of crystals, or even a copious deposit in fresh urine, would be the forerunner of stone formation, yet it is known that many persons pass uric acid and oxylates in large quantities without being the subject of lithiasis.

Anatomically, the lower calyx of the kidney is well below the upper extremity of the ureteral outlet. When man went on all fours, there was probably perfect drainage from this calyx, as, in the prone position, it empties perfectly. When the patient is on his back, all the calices drain imperfectly. In the case quoted the stone formation may have begun at the time the patient had an injury to his leg resulting in amputation of the right thigh, with probable confinement in bed for some time. Next to the pelvis, the lower calyx is the most frequent site for stone.

Stone is most common among the Hindus, Arabs, Southern Chinese, and the Anglo-Saxons, in the order named. While it would appear that stone should be more common among those who eat largely of foods rich in purines, which cause the excretion of large quantities of uric acid, yet it is well known that stone occurs much more frequently in the poor than in the rich, particularly in those who live on monotonous diet composed largely of carbohydrates. In fact, the majority of uric acid stones are found in people living on a practically purine-free diet.

Fifty years or so ago, stone in children was quite common, but under better hygienic conditions and more rational feeding, it has declined greatly. Therefore, we must look further for the cause of stone formation.

McCarrison showed experimentally that, if rats were kept on a diet of oatmeal, linseed meal, sodium chloride, and calcium phosphate, and given distilled water in large quantities, about 30 per cent developed phosphate calculi. If two ounces of milk were provided for each three rats, none formed calculus.

Fujimaki found that a deficiency in vitamin A regularly produced stones, not only in the kidney and bladder, but also in the gallbladder. These developed after rats had been on this diet for 12 weeks or more. The addition of a little cod-liver oil to the diet for short periods of time, lengthened the life of the rats. Probably there was deficiency in other vitamins besides vitamin A. If the formation of stone is due to a vitamin deficiency, it may be asked why children at the breast develop it, but it must be remembered that many poorer classes nurse their children for long periods of time and it is very likely that the milk of such mothers becomes lacking in these vitamins, particularly the fat-soluble ones.

Chronic infection may predispose to stone forma-

tion. Rosenow and Meisser filled the devitalized teeth of six dogs with streptococci isolated from the urine of a patient with lithiasis. Five developed calculi and the other died before calculus developed. In four, the calculus was bilateral. Evidences of infection of the renal tract and the lesions in the kidney were slight, except where the ureter was obstructed by the impacted stone. The organism injected was isolated from the kidneys from some of the stones. In these experiments the conditions were similar to those occurring in men suffering from war wounds with infected bone lesions, in which there was a tendency to bilateral stone.

The thing that struck me most forcibly is the vitamin deficiency in forming these stones, and I think men of the urological service would do well to inquire about the diet and the possibility of injury and confinement on the back for a long time.

#### DISCUSSION

DR. A. W. MULTHAUF: There is not much more to say. I just want to bring out one point in a differential diagnosis of perinephritic abscess. I think it is probably one of the easiest diagnoses to make in the upper renal tract, because the symptomatology is so definite when the condition is well established. The first thing that probably calls attention to the perinephritic abscess is the excessive tenderness these patients have on palpation of the costovertebral area. The second, is the absence of renal findings until the condition is well along in its course. By that I mean the absence of pus or blood in the urine in the early stages. The x-ray is likewise a help, because they seem to believe that there is obliteration of the size of the psoas shadow on the side on which the abscess is. I should like to know if, from the autopsy, they could draw any conclusions as to the cause of the marked gangrenous condition which was present in this particular case.

DR. JAMIESON: The diagnosis in perinephritic abscess is not always as easy as the previous speaker states. It is true that, where there is bulging of the costovertebral angle, with marked tenderness and the constitutional symptoms of septic absorption, the diagnosis is fairly easy. But in the incipiency of these cases, where there is nothing but a septic temperature, with an abscess located well up under the ribs and no costovertebral tenderness, the diagnosis can be made only by weighing all the symptoms and through a process of elimination arriving at a correct diagnosis. Until the cortical abscess bursts, or finds its way into the pelvis of the kidney, the renal findings are usually negative.

DR. J. MOTT RAWLINGS: The kidney in this particular case shows as extensive an involvement with cortical abscesses from the calculus residing within its interior, as any case I have seen. In two places the erosion through the cortex was complete and this caused the perinephritic abscess to form. The extensive gangrene was due to the tremendous extent of the perinephritic abscess, which had eaten its way to Poupart's ligament, had caused an abscess of the psoas muscle and had begun to cause necrosis of the abdominal wall.

#### PUBLIC HEALTH NOTES

J. ROSSLYN EARP, Dr. P. H.

Director New Mexico State Bureau of Public

MEXICAN SMALLPOX

An epidemiological study of the greatest importance to all physicians practising in the Southwest is that published recently by Chapin and Smith on the two varieties of smallpox.1 The milder variety (alastrim) spread over the world from Florida in the years following its appearance there in 1896. It is the contention of these authors that the mild type breeds true. They have set themselves to show, and have succeeded to a remarkable degree in showing, that outbreaks with high fatality rates arise from endemic foci of the more severe strain of smallpox. Our interest is especially in the frequency with which outbreaks of the severe type have been derived from Mexico. A U. S. Public Health Service official stationed at El Paso in 1899 recorded that practically all Mexican cities were infected with smallpox most of the time and that two-thirds of all Mexicans seen had had smallpox. The Health Section of the League of Nations reported 4,654 deaths from smallpox in Mexico in 1928.

The writers have considered each outbreak of severe smallpox in the United States since the year 1900. Again and again the invasion of the virulent type is attributed to a source in Mexico. Less frequently, definite evidence of such a source is forthcoming. Mexico is more often incriminated in some such words as these: (In 1916) "Severe smallpox had been endemic in Texas for a long time, but the local health officers believe that there were frequent importations from Mexico. Arizona is supposed to have obtained its smallpox from the same source."

The situation is summarized as follows:

The most important source of our virulent small-pox has been Mexico, where the disease has prevailed extensively for a long period. Our border states have been infected many times and have had more frequent outbreaks than other parts of the country. Just before the period in which our study begins, there was much virulent smallpox in Arizona, New Mexico, and Texas. It was largely among Indians and Mexicans and much of it was known to have been derived from Mexico. Notwithstanding the lack of reliable statistics from this part of the country, outbreaks of the severe type of smallpox have been noted in California during ten of the years 1911-1927; in Arizona during ten of the years 1908-1926; in New Mexico in 1923; and in Texas in thirteen of the years 1908-1923. In many instances a number of localities have been infected and, occasionally, the disease has been imported several times. Louisiana, though not a border state, has through railroads to Mexico and frequent and close

communication by water; it suffered from severe smallpox during twelve of the years 1900-1921. It is true that importation from Mexico has not been demonstrated in every outbreak, but it has been proved for a considerable number. Absence of good epidemiological work explains the absence of reliable records and also much of the presence of the disease.

The constant occurrence of a highly fatal type of smallpox in Mexico and the frequency of outbreaks of this type of the disease in some of the border states should at least put us on our guard. The excellent vaccination laws of New Mexico may account for the rare appearance of this state in Doctor Chapin's black list and the absence of fatal smallpox in recent years. Constant vigilance is the price of safety.

#### PRESIDENTIAL ADDRESS ON PUBLIC HEALTH

I wish that every practising physician in New Mexico might have an opportunity to read Dr. Frank Stephenson's presidential address to the Colorado State Medical Society at Estes Park on September 8.2 Dr. Stephenson thinks to the bottom of our problems and maintains that calm philosophy which is possible only on such a basis. The degree to which government can control us depends ultimately upon "the common thought of the people. . . . . Common thought probably does not approve control of the morals or health of an individual so long as any ill effects are confined to himself, except as applied to childhood." Dr. Stephenson objects as a taxpayer to contribute to the care of a patient suffering from communicable disease. He is willing to help bear the expense of insisting that the patient shall secure treatment. One suspects he would be willing to share in the expense of educating the patient to the point where he is willing to seek treatment without being forced to do so. It is apparent that, as a physician, he will negotiate in a public-spirited way to find some means of securing adequate treatment for those who are unable to afford it. Here are his axioms stated so succinctly that I must beg leave to quote once more.

Let us assume it established then, that individuals have inalienable rights upon which the government ought not to infringe; that there are fixed and just limits to the obligation of the taxpayer; that the medical profession is concerned with public health administration as a matter of fundamental principle; that the two fields of service are closely allied and interrelated; that they are both parts of one single and whole medical practice; that each has duties to perform toward the other, necessitating friendly cooperation; and that without that cooperation both public health and private practice will suffer.

Here is one point that remains unsettled. Would Dr. Stephenson (as a taxpayer) wish to have a diagNOVEMBER, 1932 473

nostic procedure charged up to him, or would he prefer to pay a policeman to compel a person suspected of a communicable disease to prove his innocence (or guilt) at his own expense? Practical illustrations are the routine examination of food handlers and the provision of free Wassermann service for diagnostic use. I pose this question simply to round out Dr. Stephenson's survey of the province of public health. I am confident that Dr. Stephenson, the "common thought," and I, should all give the same answer.

#### REFERENCES

- 1. Chapin, C. V.; and Smith, J.: Permanency of the mild type of smallpox. J. of Preventive Med.: 6:273 (July) 1932.
- 2. Stephenson, F. B.: Public health and the medical profession, Colorado Medicine: 29:393 (October) 1932.

#### DISCUSSION

DR. FRANK B. STEPHENSON (Denver, Colo.): Dr. Earp has been kind enough to take notice of my address on Public Health and the Medical Profession and to comment to some extent thereon. I should like to answer the interrogation contained in the last paragraph of his comments. I believe it is a sound sociological principle, that an individual known to have a communicable disease owes it to society to remove the menace which his condition constitutes. If it is economically impossible for him to do so, then, for the sake of public health and public economy and as a public charity, he should be treated by the state. If, however, an individual is merely suspected of having a communicable disease, he is more in the category of a suspected criminal, and it is incumbent upon the state to make a diagnosis and prove or disprove the suspicion. Even in such cases, however, I believe that, in the interests of public economy, he might well be urged to pay for his diagnosis, and that the state should make it only upon his refusal to do so. Furthermore, when a state laboratory receives blood specimens without restriction from doctors all over the state who are treating patients privately and are requiring, let us say, the Wassermann test in the course of their priva'e treatment of a "pay" patient, it is economically unfair that some practising pathologist, who might otherwise receive a just fee from this particular patient, should be taxed for having the work done elsewhere. Dr. Earp cites a practical illustration and I am, in turn, citing another practical illustration. I agree with him entirely with respect to patients who are examined at public health clinics, but do not believe state laboratory facilities should be ex'ended to the patients of private practitioners who are paid a fee for their own work on the case.

## ARIZONA STATE MEDICAL ASSOCIATION.

(Continuaton of Annual Reports)
TO THE COUNCIL AND HOUSE OF DELEGATES,
ARIZONA STATE MEDICAL ASSOCIATION
Gentlemen:

We the undersigned, a committee duly appointed to audit the books of the Association's State Treasurer, Dr. Yount, report as follows:

- (1). We have checked the bonds listed in the report and find them in the safe deposit box in the Bank of Arizona, and the cash of the General Fund and the Medical Defense Fund is on deposit in the Bank of Arizona and the Yavapai County Savings Bank respectively, in amounts reported.
- (2). We congratulate the Association in the choice of Treasurer and commend him for the thought and efficiency which he has displayed in handling the Association's funds.
- (3). We recommend that paragraph 1, page 3 of his recommendations, "that the total dues be continued at \$12.50 (twelve dollars and fifty cents) per annum", be adopted.
- (4). We recommend that paragraph 2 of his recommendations, "that \$500.00 (five hundred dollars) be transferred from the General Fund to the Medical Defense Fund", be adopted.
- (5). We recommend that, contingent upon the adoption of the above paragraph, the Treasurer be instructed to purchase \$500.00 (five hundred dollars) worth of United States bonds, paying for them from the Medical Defense Fund now in the Yavapai County Savings Bank.
- (6). We further recommend that the duties of the Associtaion's Treasurer shall include: Sending a copy of his annual report to each member of the Council and Medical Association.
- (7). We further recommend that the sum of \$25.00 (twenty-five dollars) be paid the Association Treasuurer annually to defray the expenses of his office.
- (8). We further recommend that the Medical Defense Committee establish a maximum amount that will be paid in the defense of any liability suit which may be brought against one of our members; and that that amount be published to the Association membership; and that the Association Treasurer by instructed to pay no warrants in excess of that amount.

Respectfully submitted, H. T. Southworth, John W. Flinn.

## REPORT OF COMMITTEE ON NATIONAL LEGISLATION.

The percannial question of the Jones Bill has again come up for consideration this year and your representative has sent letters to the Arizona representatives in Congress protesting against the passage of this bill. The Jones Bill has to do with Ma-(Continued on page 480)

#### TREASURER'S REPORT

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G	en	ŧΙ	PI	ne	n	*

I present herewith Treasurer's report for the year ending April 13, 1932. (Books closed this date).

#### GENERAL STATEMENT

GENERAL STATEMENT	
Total Receipts All Sources:	
Balance General Fund April 22, 1931,\$ 1,	.763.36
	562.50
Donation (Troth)	15.00
Defense Fund, Balance in Savings Bank April 22,	
1931. \$4,080.68	
Interest and coupons 581.86 4,	662.54
United States Bonds	000.00
Walal David II and	000.40
Total Receipts all sources \$20, Total Disbursements all sources 2.	
<u> </u>	<del></del>
Balance All Funds	\$17,980.15
ANALYSIS AND STATEMENT BY FU	NDS
1. General Fund:	
Receipts:	
Ba'ance in Bank of Arizona April 22, 1931,\$ 1,	763.36
285 Members pro rated at \$6.00 Medical Defense 1,	
285 Members pro rated at \$6.50 General Fund, 1,	
Donation (Troth)	15.00
Total Receipts	\$ 5,340.86
Disbursements, Duly Authorized, Paid from General Fun	d:
A. C. Taylor Printing Co., Programs\$	26.25
Donofrio Floral Co., (Dr. Todt)	15.00
St. Louis Button Co. Badges	48.00
D. F. Harbridge, Secretary's expense	60.00
Bank of Arizona, Safety Deposit Box	3.00
	586.00
Martindell, Horne & Co., Treasurer's bond	30.00
	100.00
Sloan, Helton, McKesson & Scott, Med. Defense	5.00
, A	150.00
A. C. Taylor Printing Co., Stationery	4.00
Sloan, Holton, McKesson & Scott, Med. Defense	5.00
	100.00
Sloan, Ho.ton, McKesson & Scott, General	7.85
A. C. Taylor Printing Co., annual cards	3.50
D. F. Harbridge, Sccretary's expense	60.00
D. F. Harbridge, telephone	1.30
	100.00
	509.40
A. C. Taylor Printing Co., Med. Defense forms	27.50
A. C. Taylor Printing Co., stationery	16.50
Tucker & Morgan, Med. Defense (Powell vs Sweek) St. Louis Button Co., badges	43.60
Ralph Williams, file	43.60 14.60
A. C. Taylor Printing Co., programs	40.75
— —	
	023.25
April 12, 1932, Transferred to Defense Fund	894.10 2,917.35
April 13 1932 Release in Pearls of Avizona	\$ 9.499.51
April 13, 1932, Balance in Bank of Arizona	\$ 2,423.51

#### 2. Defense Fund:

#### Receipts:

Balance in Savings Bank April 22, 1931	69.62 87.24 212.56 212.44	6,372.54
Expenditures:		
Bank of Arizona, Safety Deposit Box\$	3.00	
Sloan, Holton, McKesson & Scott	5.00	
Sloan, Holton, McKesson & Scott	5.00	
J. T. Gust, Attorney, annual retainer	100.00	
Sloan, Holton, McKesson & Scott	509.40	
A. C. Taylor Printing Co., Med. Defense forms	27.50	
Tucker & Morgan	66.00	
Slean, Holton, McKesson & Scott	100.00	815.90
April 13, 1932, Balance in Yavapai County Savings		
Bank		5,556.64
CLEARING: Dues 285 members at \$6.00\$	1,710.00	
Cost of Med. Defense for year	815.90	
Balance of Defense Fund in General		
Fund, Transferred to Yavapai Coun-		
ty Savings Bank April 12, 1932\$	894.10	
TOTAL AMOUNT AVAILABLE FOR		
MEDICAL DEFENSE		
Cash in Defense Fund\$	5,556.64	
United States Bonds	10,000.00	
·	15,556.64	
EARNINGS OF DEFENSE FUND	10,990.01	
and Bonds Since Last Report		
Bonds, Coupons June 1931\$	212.56	
" Dec. 1931	212.30	
Savings Account, Interest June	69.62	
Dec	87.24	
Det	01.24	
8	581.86	
UNPAID EXPENSE FOR 1932:		
To Southwestern Medicine—285 members at \$2.00\$	570.00	
To Sccretary for office expense	120.00	
Stenographer annual meeting	100.00	
	100.00	
\$	790.00	

#### RECOMMENDATIONS:

- 1. Our Medical Defense reserve has been increased this year by about \$1,500.00, but from the increased cost of the cases which we have had to defend in the last two years, I believe that we should continue our Medical Defense dues as last year, namely \$6.00. The Association dues of \$6.50 have given us a very satisfactory balance this year. The total dues should be the same as last year, \$12.50.
- 2. With a balance in the General Fund of \$2,-423.51 I would recommend the transfer of \$500.00 from the General Fund to the Medical Defense Fund.

3. I recommend the purchase of United States Government Bonds, 1944-1945 bearing 4 per cent interest, of the sum of \$4,000.00 plus cost of purchase.

Respectfully submitted, C. E. Yount,

Treasurer.

We, the undersigned, acommittee duly appointed by President H. A. Reese, have audited the books of the Treasurer and inspected the bonds in his custody, and find them to be correct.

> H. T. Southworth, John W. Flinn,

# Southwestern Medicine

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Published monthly for the Board of Man	nagers of the four constituent societies.		
OL. XVI. NOVEMBER, 1932 No. 1			
EDITORIA	AL STAF		
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DR. P. G. CORNISH, Jr.			
MEDICAL AND SURGICAL ASSOCIATION	Thursday Evening		
	Address of the President.		
OF THE SOUTHWEST	Address of the President-Elect.		
	W. P. Holbrook Tueson		
PROGRAM	"Therapy in Chronic Rheumatic Diseases."  LOUIS B. BALDWIN Phoenix		
of the	"Some Clinical Aspects of Essential		
EIGHTEENTH ANNUAL MEETING	Hypertension."		
	FRIDAY, DECEMBER 9		
ALBUQUERQUE, N. M.	J. J. BEATTY Tueson		
DECEMBER 8, 9, and 10, 1932	"What Can We Do with the Far Advanced Case of Tuberculosis?"		
	KELVIN D. LYNCH El Paso		
The program for this year's Southwestern meeting	"Some Ob ervations on Transurethral Pros-		
is different from anything which has been presented	tatic Resection."  DAVID M. DAVIS Phoenix		
at any annual medical meeting in the southwest for	"Radium Treatment of Careinoma of the		
many years, at least. It is made up almost entirely	Prostate and Bladder."		
from the membership of the Association with only a	C. S. KIBLER Tueson		
•	"Pulmonary Tuberculosis with Acute Onset." W. P. SHERRILL Pheenix		
few invited guests. It will be inmarked contrast to	"Tuberculosis from the Standpoint of the		
the New Mexico Medical Society's last annual meet-	Pediatrician."		
ine, where most of the program was given by invited	STEPHEN A. and FRANK P. SCHUSTER - El Paso		
guests. This will be a challenge to the doctors of	"Some Observations on Cataract." R. B. HOMAN El Paso		
New Mexico for attendance, and will be a challenge	"The Treatment of Lung Absects."		
to the participants in the Southwes ern program. If	THOMAS W. WOODMAN Phoenix		
our members are able to present as interesting and	(To be announced.)  Friday Evening		
	Dinner and Dance for members, guests and		
instructive a program and if the meeting attracts as	ladies.		
large an attendance from New Mexico, as their own	SATURDAY, DECEMBER 10		
annual meeting did, it should silence the voices of	H. M. PURCELL Phoenix "Trichomonas Infection."		
those who have insisted on a program made up, in	VICTOR RANDOLPH Phoenix		
large part, of guests from all over the country.	"Intrapleural Pneumolysis, with Special Ref-		
	crence to Bilateral Pneumothores, in the		
THURSDAY, DECEMBER 8 General Scientific Session	Treatment of Tuberculosis."  HENRY L. FRANKLIN Phoenix		
MELDRUM K. WYLDER Albuquerque	"Refractive Errors in Their Relation to		
"Autumn Diarrh a in Children."	General Medicine."		
N. H. KELLER El l'a o	WM. L. Reid Phoenix "Symptoms of Gall B'adder Disease and		
"Physiology of Nephritis."  J. H. PATTERSON Phoenix	Operative Findings."		
"The Cervix and Some of Its Problems."	W. WARNER WATKINS Phoenix		
M C. COMER Tueson	"The Natural History of Gastric Ulcer as		
"Con evatism versus So-eal!ed Radicalism."  J. H. Gambrell El Paso	Shown by X-ray."  MEADE CLYNE Tueson		
"Cereinema of the Thyroid, with Case Report."	"Sealenotomy in the Treatment of Tuber-		
JOHN W. FLINN Prescott	eulosis."		
and	General Business Meeting.		
ZIDUD M. FLINN Albuquerque "The Tissue Reactions to the Tuberele	Committee Reports. Election of Officers.		
Baeillus."	Place of Next Meeting.		

<b>,</b>		
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Last minute changes in the program will be the following:

Dr. E. W. Johns, Albuquerque, will present a paper on "Psoriasis Rupioides Complicated by Carcinoma."

Drs. Walter B. Coffey and John D. Humber, of San Francisco, will give the address on Thursday evening on some phase of Research Work; the two papers listed in the program for that evening will be placed elsewhere in the final program.

A Clinical Luncheon will be held each noon. On Thursday, the address will be given by Dr. O. S. Fowler, of Denver; on Friday, Dr. W. B. Coffey, of San Francisco will give the address; on Saturday, Dr. G. Heusinkveld, of Denver, will give the address.

Clinics will be arranged for Friday and Saturday mornings, at the St. Joseph's Hospital and Presbyterian Hospital.

#### MRS. WALTER JACKSON FREEMAN

The president of the Woman's Auxiliary to the American Medical Association, Mrs. Walter Jackson Freeman, died in Philadelphia, on October 27, after an illness of three weeks. Mrs. Freeman was the daughter of the late Dr. William W. Keen of Philadelphia, her husband is a physician and she has two physician sons. Her entire life was peculiarly allied to the medical profession and we join with the Woman's Auxiliary in mourning an inspiring and able leader.

#### WILLIAM AUGUST PUCKNER

The death of Prof. William A. Puckner on October 1, after more than twenty-six years of service as Secretary of the Council on Pharmacy and Chemistry, marked an epoch in the work of that body. In February, 1905, the Board of Trustees adopted a resolution creating the Council, and Professor Puckner took office as Secretary on March 1, 1906. It is interesting to realize that three of the members of the Council at its inception-namely, Drs. George H. Simmons, Torald Sollmann and Robert Hatcher -are still members of that body and that they with Professor Puckner were a vital force in its activities during its first quarter century. The Council has aided in the elimination of secrecy in medical prescription; it has discouraged misleading statements; it has standardized new preparations before their inclusion in the Pharmacopeia, and it has brought the medical profession of this country to a better realization of scientific therapeutics than obtains anywhere else in the world. In its work the Council has had the approval of the majority of the medical profession, if not their constant cooperation. In 1909, shortly after taking over his duties as Secretary of the Council, the vision of Professor Puckner became so impaired that it was necessary for him to give up laboratory work entirely. Nevertheless, his memory was so remarkable, his grasp of affairs so embracing, and the force of his character so tenacious that he carried on his work efficiently almost to the day of his death. As Secretary of the Council he exercised a rare judicial attitude toward the problems that came before him, at the same time evidencing a scientific point of view in his evaluation of both laboratory and clinical evidence. The Board of Trustees will, at its next meeting, select a successor to the man who served as field marshal in the campaign for scientific therapy during the last twenty-five years. His position brought on him not infrequently bitter attacks and even the enmity of some of the commercial interests that considered themselves damaged by the Council's work. The next epoch in the career of the Council should have the cooperation from practicing physicians so complete as to indicate to manufacturers in the field of pharmacy the necessity for maintaining scientific standards if they wish medical support. (Jour. A.M.A., October 15, 1932, p. 1354.)

The Council has unanimously adopted the following report of the Committee on Resolutions on the death of William August Puckner:

William August Puckner was born February 24, 1864, at New Holstein, Wisconsin. He died in the Presbyterian Hospital, Chicago, October 1, 1932. He had been in failing health for a long time and in the hospital some ten weeks.

The creation of the Council on Pharmacy and Chemistry was authorized by the Board of Trustees of the American Medical Association February 3,

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1900; the must meeting of the newly created Counch was neld at Philodorgh some ten days later. riolessor ruckner, one or the original members, atcolluct that lifeting and was active in formulating the principles on which the Council has worked, as expressed in his official rules of procedure. One year later he became Scretary, a position of grave responsibility; he illied it well and faithfully for twenty-six years and seven months. Professor ruckher was wen equipped for the position ne had assumed. A graduate of the Chicago College of Pharmacy, now the Illinois School of Pharmacy, he later became professor of Chemistry in that school. me took a course of chemistry at Harvard University and later studied at the University of meldelberg. He received the honorary degrees of Doctor or rnarmacy, from the University of Pittsburgh, and Master of Pharmacy, from the Philadelphia School of Science. Doctor Fuckner was an outstanding coemist and at the time of his appointment as Secretary of the Council he had already won for nimself an enviable reputation in the field of alkaloidal enemistry. He was a charter member of the Chicago Section of the American Chemical Society and was elected chairman of that section in 1895. For some years Doctor Puckner was chief chemist for a pharmaceutical firm known as "Searle and Hereth" and this, added to his experience as professor in the school of pharmacy, gave him an inti-mate knowledge, from every angle, of the work he was undertaking. On accepting the secretaryship he, of course, gave up his connection with this firm. Doctor Puckner was endowed with an especially good memory which possibly became more acute when he became blind. If he were asked about a product that had been before the Council months or years before, without referring to the bulletin or any other records, it was seldom that he was unable to give in detail every action taken that lead to its acceptance or rejection. Under his direction, the weekly bulletin—the medium by which the Council transacts its business-became a model of efficiency. But of much more importance in this Council work was his personality, his attributes, his characteristics. While occasionally he had to meet, personally, representatives of firms submitting products, he preferred wherever possible the more deliberate practice of correspondence. In this he exhibited tact, patience, resourcefulness, qualities that were absolutely necessary for a successful solution of the many problems that were continually coming up. In all such cases Doctor Puckner was able to see and appreciate the point of view of the other side, the manufacturer. When his eyes began failing and when he realized that the condition would inevitably result in blindness. Professor Puckner courageously prepared himself to face the handicap. He investigated the practicability of Braille's system for the blind and the typewriter; both of these he used. He kept in touch with current medical and chemical literature, both English and foreign, especially German, by having matter read to him, and in the case of important articles, recorded on the dictaphone for review at home; for his determination to overcome this disability compelled him to work at night as well as day. To those who knew him at his daily work. Doctor Puckner seemed to have dedicated his life to that which seemed nearest to his heart-the success of the Council and its efforts to advance scientific therapeutics. With patience in adversity, with sincerity of purpose, with conscientious devotion, he carried on. His heart was in his work; His Life devoted to the cause he served.

The Council, individually and collectively, wish to express their high regard and affection for Professor Puckner as a friend and co-worker and admiration for the way he carried on, for his executive ability, for his efficiency in spite of handicap, for

Fis loyalty. In his death, the Council has lost a member of unique value: THE MEDICAL PROFESSION, a servant who unobtrusively served it faithfully for a quarter of a century.

#### REVIEW OF DEATHS FOR MAY, 1932

(Continued from page 469)

tered. Lower part of small intestine was very dark and distended; there was evidence of peritonitis. There was a mass in the right side which, when delivered, showed the tip of the appendix only, the lower ileum and cecum had been invaginated into the ascending colon. The intussusception was reduced. About 4 inches of the lower ileum was gangrenous, the blood supply having been shut off. Child was in shock. Resection was quickly done and abdomen closed." Child died.

Case No. 14093: Entered the hospital May 12th and died May 21st, following cholecystectomy and appendectomy. This man developed an acute enteritis of unknown origin on the fifth postoperative day, then pneumonia and progressive cardiac collapse.

Case No. 14195: This patient died three hours after admission to the hospital. The diagnosis was morphine addiction, cellulitis right arm, toxic hepatitis. No postmortem examination was done.

It would seem in reviewing these charts that everything possible was done for these patients and that death in each instance was inevitable. All of these records were quite complete.

THOMAS W. WOODMAN, M. D.

# ARIZONA STATE MEDICAL ASSOCIATION.

(Continuaton of Annual Reports)

(Continued from page 473)

ternity and Child Welfare, and continuously bobs up because of the insistence of certain heads of socalled Child Welfare who seemingly have that something over the Congress which commands respect.

This bill, just as the Sheppard-Towner Bill, ties in a lot of child welfare theories with a health program, in which lay people govern the medical profession through the working of the bill. The prime object is to subsidize the health departments with equal amounts of money put up by Congress to do this work. This kind of legislation is not desired by the health departments, much and all as they need money to do necessary things, and niggardly as most legislatures are with the departments of health.

There have been bills introduced which are more favorable to health departments which tie them up with the Surgeon General's Department and which are governed by that department, making medical men deal with medical men. Even these have been frowned upon by the guiding spirits of the A. M. A. This legislation is vicious, and any comment as to lay people dipping in too deeply in medical affairs to the people set up in the Child Hygiene Department brings forth acrid comment from the various individuals in the department.

When the Sheppard-Towner plan was working in

Arizona,—and we spent as much per capita as any other state,—cur infant mortality was the highest in the United States, one hundred twenty-five per thousand. Our climatic conditions may have accounted for some of it. But when this was withdrawn and a sensible program of immunization substituted by the Arizona State Board of Health, the rate dropped materially and we passed many states. Not one immunizing dose of anything was given or advocated under the Sheppard-Towner program, and it seemed the state which had the best book reports of visits made got the most credit.

If any of you have influence with our congressmen, ask them to refuse to support legislation which is vicious enough to have medical men told by laymen how to conduct health departments.

Another vicious bill is that which will again provide for more hospital beds for veterans. A survey made has shown that there are enough beds to care for all of the veterans who will be sick from any cause, and now that the bars are down and no service connection is needed, they go for every condition.

No one wants a man sick from service and while in the service denied anything, and we do not seriously object at present to the apparent lessening of vigilance by the profession allowing men to go for everything, but to add more beds when not needed, especially when the taxpayer is already overwhelmed, should be strenuously fought.

Soon the families of the veterans will have to be admitted, and already, only a few years ago, it was hard to fill the beds at Whipple. When these families are carried down through three generations the United States will be caring for one-third of the medical work of the country, as the hospitals will have to be used, for Uncle Sam won't shut any of them down because of pressure brought by the communities they are in. In fact, only a tax payers' revolution of non-payment and a defiant attitude towards the government will ever make a U. S. Congress retrench, if the events of the past few weeks concerning the cutting of Federal pay is an indication.

If the national government will not do the work, then states and counties will take over the hospitals and state medicine will be over the top, and we shall be governed, not by freedom of action and good medicine which is the result of keen competition, but by the man of lesser medical ability who is a rolitician and has the grafter mind. You know how this thing works already in other lines, with paper brains holding big offices all over the country.

Freedom of choice of a physician should be the right of every American citizen, but in our own state this is not now true to a large extent, and we do feel that the freedom of choice is becoming less with the passing years.

Any of you having friends among congressmen should call their attention to this bill, both from your own and the taxpayers' standpoint.

If bonuses are given in the form of medical serv-



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CRUM EPLER, M. D. Superintendent

ices, then either have the national government assume the medical bills on a schedule basis, or give the veteran such sick benefits in the form of more pension so that every community is benefited instead of a few, and the men have their freedom of choice of physicians.

Even as it is those veterans out of a job tend to seek the hospitals, thereby creating a bigger expense than just keeping them. Two cases that have come to my own personal attention recently have demonstrated this.

R. J. STROUD.

#### "STONE WALLS DO NOT A PRISON MAKE NOR IRON BARS A CAGE."

Winter is a jailer who shuts us all in from the fullest vitamin D value of sunlight. The baby becomes virtually a prisoner, in several senses: First of all, meterologic observations prove that winter sunshine in most sections of the country averages 10 to 50 per cent less than summer sunshine. Secondly, the quality of the available sunshine is inferior due to the greater distance of the sun from the earth a'tering the angle of the sun's rays. Again, the hour of the day h as an important bearing: At 8:30 A. M. there is an average loss of over 31%, and at 3:30 P. M., over 21%.

Furthermore, at this season, the mother is likely to bundle her baby to keep it warm, shutting out the sun from Baby's skin; and in turning the carriage away from the wind, she may also turn the child's face away from the sun.

Morecver, as Dr. Alfred F. Hess has pointed out, "it has never been determined whether the skin of individuals varies in its content of ergosterol" (synthesized by the sun's rays into vitamin D) "or. again, whether this factor is equally distributed throughout the surface of the body."

While neither Mead's Viosterol in Oil 250 D nor Mead's 10 D Cod Liver Oil with Viosterol constitutes a substitute for sunshine, they do offer an effective, controllable supplement especially important because the only natural foodstuff that contains ap-

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preciable quantities of vitamin D is egg-yolk. Unlike winter sunshine, the vitamin D value of Mead's antiricketic products does not vary from day to day or from hour to hour.

PSYCHOLOGY AND PSYCHIATRY IN PEDI-ATRICS: the Problem Report of the subcommittee on Psychology and Psychiatry, Bronson Crothers, M. D., Chairman, Children's Hospital, Boston. White House Conference on Child Health and Protection. The Century Co., New York, London.

This book is dedicated to the children of America whose faces are turned toward the light of a new day and who must be prepared to meet a great adventure.

The intelligent psychiatrist regards struggle and unhappiness and even limited failure as vivid and often promising evidence. The over-exhibition of maladjustment, delinquency, truancy, school failure, he reports not as defiance of moral or educational codes but as signs that the child has not found a simple and effective way of meeting the world in which he lives.

It is a readable, well-thought-out report on a timely subject. It endeavors to show what psychiatrists doing valid work are trying to do. It attempts to correct much sloppy thinking on the role the psychiatrist should play in pediatrices.

T. G. B.

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(REGISTERED U. S. PATENT OFFICE)

VOL. XVI.

DECEMBER, 1932

No. 12

OFFICIAL ORGAN

NEW MEXICO MEDICAL SOCIETY
ARIZONA STATE MEDICAL ASSOCIATION
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# PRIMARY CARCINOMA OF THE BRONCHUS

WILLIS S. LEMON, M. D., PORTER P. VINSON, M. D., HERMAN J. MOERSCH, M. D.,

Division of Medicine
and
B. R. KIRKLIN, M. D.,
Section on Roentgenology,
The Mayo Clinic, Rochester, Minnesota.

(Read before the Fiftieth Annual Meeting of the New Mexico Medical Society, Santa Fe, New Mexico, May 19-21, 1932.)

Boyle', in 1810, made the first contribution to the literature on the subject of primary carcinoma of the lungs and bronchi. Even though his description was vague, it apparently excited some interest, because within the next fifty years various types of such growths were described, their difference from tuberculosis was established, as well as the clinical manifestations and age incidence. Eberman', in 1857, made the first collection of cases and was able to report on seventy-two from the scant literature of the times. He described one case occurring in a child aged nine years. Fifteen years later, Bennett' considered primary carcinoma of the lungs and bronchi sufficiently important to choose it as the subject of his Lumlein lecture. He reported thirty-nine cases. Throughout the remaining years of the century, the subject of classification received much attention and was accomplished mainly by the work of Rokitansky, Langhans, Marchiafava and Malassez\*, who made the first microscopic studies. Many additions were made to the literature and growing numbers of cases were reported: in 1912 Adler4 was able to review and tabulate 374 cases of carcinoma and ninety cases of sarcoma of the lung and bronchus. This report excited general interest in the subject, and called atintention to the relative frequency of occurrence.

#### INCIDENCE

Brunn, who became interested in the surgical treatment of primary carcinoma, made the following. From 1872 to 1898, a period of twenty-six primary carcinoma of the lung seems to be increasing. From 1872 to 1898, a period of twenty-six years, 382,671 necropsies showed 159 cases of primary carcinoma, or 0.04 per cent; from 1898 to 1916, a period of eighteen years, 192,271 necropsies showed 488 cases, or 0.24 per cent, six times as great a number. From 1916 to 1924, a period of eight years, 33,308 necropsies showed seventy-one cases, or 0.21 per cent. From 1916 to 1924 is the period after the influenza epidemic; the incidence was no greater than during the previous eight years."

Rusk and Randolph reported twenty-two cases of primary pulmonary carcinoma and stated the incidence to be 1.35 per cent as disclosed by necropsy. Eloesser, in 1925, reported on twenty-seven cases, of which eight were based on necropsy, representing 3.9 per cent of a total number of 206 necropsies, and 20 per cent of forty deaths due to carcinoma. There were circumstances attending the care and transference of patients in the hospital that accounted for this abnormal incidence.

Ewing, in 1922, placed the incidence of primary carcinoma of the lung at 1 per cent, using figures of Karrenstein and Adler<sup>4</sup>, who compiled the reports on necropsy from various continental sources and found 168 cases of pulmonary carcinoma among 16,578 necropsies in which carcinoma of some type was discovered.

Allen and Smith quoted the percentage incidence of primary carcinoma as it is found in England, and Habliston referred to the American statistics compiled by one of the great insurance companies. There is but little difference between English and American statistics.

One of the latest reports is that of Rosahn, published in 1930, which constitutes a very careful study of the percentage incidence of primary pulmonary carcinoma with respect both to the percentage of all necropsies and to percentages of carcinomas. He found that, in the period between 1910 and 1919, primary pulmonary carcinoma was found in 0.44 per cent of all necropsies, and in 4.39 per cent of all cases of carcinoma; and, in the period between 1920 and 1930, primary pulmonary carcinoma was found in 0.89 per cent of all necropsies and in 6.98 per cent of all cases of carcinoma. Rosahn concluded that the incidence is increasing.

Since 1925, when our study was begun, a steadily increasing number of positive diagnoses of primary carcinoma has been made in the Section on Diseases of the Thorax at The Mayo Clinic. In the cases included in this report, a positive diagnosis was made only after examination of tissue actually removed from the lumen of the bronchus during a bronchoscopic examination. The diagnosis was not based on clinical impressions, roentgenographic appearance, examination of pleural fluids for carcinomatous cells, or from biopsy of metastatic lymph nodes. Had all of these legitimate accessories to diagnosis been accepted, a much larger number of cases would have been included. In some cases the clinical criteria were satisfactory and in others carcinomatous (metastatic) regional lymph nodes were present. In the former cases were patients whose bronchial tissue was reported as inflammatory but who later died elsewhere of carcinoma. These are not included in the following report of yearly incidence:

From May 1 to December 31, 1925, one case of carcinoma was found among 115 patients examined bronchoscopically; in 1926, ten cases were found among 142 patients; in 1927, eleven cases were found among 188 patients; in 1928, eighteen cases were found among 180 patients; in 1929, eleven cases were found among 169 patients; and, in 1930, twenty cases were found among 191 patients; and to October 30, 1931, twenty-six cases were found among 140 patients. Five additional cases were diagnosed in November and December, 1931.

A diagnosis has been made in a steadily increasing number of cases; an increase out of proportion to the number of cases referred for bronchoscopic examination in the section. For example, there were almost three times as many positive diagnoses made in 1931 as in 1927, but there were really fewer bronchoscopic examinations. Moreover, the recognized indications for bronchoscopic examination have re-

mained unchanged throughout the whole period and the technic has not been altered. It would seem that the best explanation for the increase in positive diagnosis is the actual increase in the disease. Other factors, such as greater alertness, greater diagnostic accuracy, more exhaustive examinations and more frequent removal of tissue for biopsy, cannot be disregarded in searching for an explanation of the alarming increase in incidence.

#### ETIOLOGY

In our series of ninety-six cases, 66 per cent of patients were men, and 61 per cent were aged between forty and sixty years; 4 per cent were aged less than thirty years. Apparently our percentages for age and sex are about the same as those of other observers. Brunn reviewed 576 cases and found 361 patients to be between the ages of forty and sixty years; a percentage of 62. Habliston's series of nineteen case; included fifteen men and four women; the average age was forty-three years and eight months.

The carcinoma was positively related to tuberculosis in 3 per cent of the cases, and in 17 per cent there was an antecedent history of chronic pulmonary suppuration. In many cases bronchiectasis was present, and in a small number of cases abscess and empyema, but these suppurative diseases were the result of the carcinoma, and not its cause or even its antecedent. Sequelae of a suppurative type or ulceration of the carcinoma, however, produced fever in 54 per cent, chills in 14 per cent and clubbing of fingers in 7 per cent of the cases. No special occupation could be considered as contributing to the development of carcinoma. Of the scores of miners examined during the period of our survey, only one was found to have pulmonary carcinoma.

Trauma is usually mentioned as a cause of carcinoma, but, in our series, symptoms of carcinoma developed in only one case following injury to the thorax. It seems probable that trauma is a coincident rather than an etiologic factor.

Regardless of the bare facts quoted, many factors are given a place in the etiology, often as an explanation for the accepted fact that carcinoma of the lungs is rapidly increasing. Meyer stated his belief that the cause of the development of carcinoma of the lung is chronic irritation. "as in every other case of carcinoma." The chronic irritation, he believes, may be due to the breathing of the gaseous distillation products of tar from the exhaust of automobiles in the street, the inhaling of cigaret smoke, and the inhalation of minute particles of dust on streets, especially if oiled, of soot, or of chemicals. He is in agreement with Eloesser and Brunn that the sequelae

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of influenza constitute an etiologic factor. Brunn stated: "The presence of post-influenzal metaplasia of the cells lining the bronchi, lately reported by pathologists, gives a starting point, no doubt, for many of the epidermoid or squamous-celled carcinomas arising in the lung. Chronic irritation as a cause seems further to be emphaszied by the fact that it is so predominant in the male sex."

Meyer remarked: "The fact that, in from 85 to 90 per cent of the cases, the disease develops primarily in the larger bronchi and in their immediate subdivisions, and not in the parenchyma of the lung, is probably ascribable to physical causes." He thinks the continuous movement and the abundant circulation of the parenchyma protect it against carcinoma, as the muscle of the heart and duodenum are protected.

In respect to the opinion regarding metaplasia, one must recall that carcinoma is relatively rarely superimposed on such diseases as bronchiectasis, silicosis, or tuberculosis, in which metaplasia is common and fibrosis a most prominent characteristic. It is well to recall that metaplasia results in the development of a cell that is highly differentiated for a special function (protection) and that dedifferentiation is necessary before carcinoma is developed.

The sigificance of tuberculosis as an etiologic factor requires some consideration. Ewing stated: "The chief etiological factor is tuberculosis. Of Wolf's' thirty-one cases, thirteen were associated with tuberculosis. Squamous-cell carcinoma developing in the wall of a tuberculous cavity is described by Schwalbe. Friedlander and Wolf' found tuberculous lesions throughout diffure carcinoma or surrounding tumor masses. In the old scleroses, atelectases, and reparative lesions of tuberculosis, may be found many alterations of bronchial and pulmonary epithelium marked by considerable cellular overgrowth. Oertel points out that the association may be accidental, at other times the two processes exist in symbiosis, while rarely tuberculosis appears to inhibit the carcinoma."

We have not observed a sufficient number of cases in which tuberculosis and carcinoma are both present to know in what respect one disease influences the other. We have not considered it possible to establish any exact relationship, etiologic or otherwise, between them, and have considered the appearance of carcinoma and tuberculosis in the same person as a coincidence. This is simply an expression of opinion; it is not statistical evidence. Pearl, Carlson and Bell, and Fortune have provided statistical evidence which is convincing and conclusive. As a result of their

work, it would appear that the evidence from case reports, experimental work and statistics fail to establish any convincing relationship between these two diseases. The fact that healed tuberculosis was found by them with equal frequency in carcinomatous and noncarcinomatous cases, shows that a previous infection with tuberculosis is without bearing on the development of malignancy. Fortune stated: "The position that the person with active tuberculosis is less apt to have malignancy because of immunity to cancer, cannot be substantiated by the statistics presented." In Fortune's and in Pearl's reports, the percentage of active tuberculosis in groups of cases of carcinoma was 5.3 and 6.6, respectively, and of inactive tuberculosis in groups of cases of carcinoma, 24.5 and 28.1, respectively. In their entirc series of nonmalignant cases, the incidence of inactive tuberculosis was almost identical. The explanation for the increased percentage of active tuberculosis in the noncarcinomatous control group, seems to depend on the fact that most carcinomas of the lung occur among persons between the ages of forty and sixty years. Patients having active pulmonary tuberculosis do not have carcinoma mainly because they rarely live long enough. Tuberculosis does not create immunity to carcinoma. Ash2 reviewed necropsy data on persons dying from tuberculosis in a sanitarium, and in 1920 he reported seven cases of primary carcinoma of the lung observed at 551 necropsies. The incidence of the two diseases seems not materially different from that of any other two major diseases, each of which may cause death.

#### TYPES

All tissue removed during bronchoscopic examination at The Mayo Clinic is referred to a pathologist for diagnosis and grading of the degree of malignancy. Almost all cases are classified under two heads: squamous-cell carcinoma and adenocarcinoma; one of our cases was diagnosed as lymphosarcoma. There were numerous unproved cases in which the pathologist could not find evidence of carcinoma, and the tissue removed was reported to be inflammatory. Later information has been received telling of the progress of the disease or of the death of the patient from carcinoma. These cases are not included in this report. Often the bronchoscopist may not be certain that he has procured a representative specimen, and occasionally he may obtain, at a subsequent examination, a bit of tissue that is more susceptible of diagnosis. Two series of cases from The Mayo Clinic have been reported, one by Vinson, Moersch and Kirklin, and one by Vinson:

Lesion	Vinson, Moersch and Kirklin	uosuii N Per Cent
Squamous-cell epitheliomas	56	56
Graded 4	35	38
Graded 3	21	18
Adenocarcinomas	35	36
Graded 4	25	16
Graded 3	6	17
Graded 2		1
Graded 1	4	2

It is apparent that primary carcinoma of the lung is highly malignant. Carcinomas graded 4, comprise from 54 to 60 per cent of all cases that were graded, and those graded 3 comprise from 27 to 35 per cent. Of the specimens examined, two were diagnosed carcinoma, graded 4, and one was graded 3, but they were not differentiated as to type of growth. In one case diagnosis of lymphosarcoma was made, and in one, carcinoma could not be graded because of the small amount of the tissue submitted.

It has not seemed to us that there could be any relationship between the squamous type of hyperplastic epithelium found with chronic suppurative diseases and the presence of such a high percentage of squamous-cell epitheliomas. There are two considerations that deter such an expression of opinion: chronic suppurative disease occurs relatively rarely as a precursor of carcinoma, and squamous-cell carcinoma does not require the presence of squamous epithelium for its development. A third consideration has been mentioned with an expression of doubt regarding the probabilities of dedifferentiation of a cell as highly differentiated as the squamous cells found in suppurative disease. We have not included subclassifications, such as mucoid types, because the function of the production of mucus is inherent in the epithelial cell and is rather an expression of function than of variety of cell. We admit the hypothetic conception of possible origin from three sources, the bronchial mucosa, bronchial gland, and alveoli, but with reservations regarding all but the first.

The first objection has just been referred to and has to do with the difficulty of distinguishing carcinomas which are believed to have originated in bronchial epithelium from those believed to have originated from the bronchial mucous glands. We

do not believe that any sharp distinction can be drawn, and are inclined to classify all of our growths as simply carcinomas arising from bronchial epithelium. We admit the possibility of origin from the epithelium of the bronchial mucous glands. Simpson and Weller have expressed much the same opinion, Simpson especially pointing out that the polymorphism of the cells usually makes such a division impossible.

The second objection has to deal with the possibility of carcinoma arising from the cells of the alveoli. Eloesser described medullary carcinomas "consisting of small solidly packed cells, closely resembling endotheliomas both in their structure and in their arrangement." He thinks they have nothing in their structure which would indicate that they were of bronchial origin. "They may as well, and probably do, originate in the lung parenchyma. They are rarer, however, than the bronchial carcinomas."

Until the exact origin of alveolar cells is established, a final opinion regarding even the possibility of carcinoma derived from the alveolar cell cannot be entertained. Lemon and Higgins, because of their experimental work, believe that the lining cells of the alveoli are really histiocytes and mesenchymal in origin. In this belief they are in accord with Fried," who not only thinks the alveolar cells are of mesenchymal origin, but denies the presence of transitional epithelium between the epithelium of the bronchiole and the cells of the alveolus. He stated: "The epithclium of the bronchiole ends abruptly and is followed by the 'naked' walls of the air sacs." In regard to the possibilities of carcinoma developing from the alveolar cell, he remarked: "The assertion of the epithelial nature of the alveolar epithelium was also based on the observation that these elements which are inconspicuous in normal tissues 'reclaim' their ancestral features in pathologic conditions, taking a fetal cuboidal aspect. The so-called alveolarcell cancers of the lung were traced to these structures. In reality the 'glandular structures' observed in sclerosed lung are nothing other than alveoli lined by cells of bronchiolar origin."

In our cases, classification has depended entirely on the appearance of the sections made from tissue removed through the bronchoscope. This evidence is not sufficient to warrant finality with regard to the origin of the peripherally placed carcinoma. Tissue can rarely be obtained from such growths by bronchoscopic manipulation. It may be remarked, however, that in specimens obtained at necropsy, the appearance of the growth was not unlike that defined by Ewing as alveolar-cell carcinoma. These are the

tumors also described by Allen and Smith, who stated: "The air vesicles may be completely filled with masses of cells of cuboidal, cylindrical or squamous form, with obliteration of the visible walls, or they may be filled with papillary projections composed for the most part of cylindrical cells." Weller has been able to find nothing more than presumptive evidence of the alveolar origin of pulmonary carcinoma, and it is Moise's belief that it is usually impossible to determine the exact site of origin, but he is convinced that the evidence points strongly to a derivation from the bronchial epithelium.

. We have not convinced ourselves that the alveolar cell is the parent cell, and at present we are not willing to admit that carcinoma can develop from alveolar cells, which we believe are derived from the mesenchyme.

#### REGIONAL AND SYMPTOMATIC CHARACTERISTICS

It has been customary to classify primary carcinoma of the lung as peripheral or parenchymal, and hilar or bronchial. If it is true that carcinomas may originate in the parenchymal tissue of the lung, such growths should be grouped with peripheral carcinomas. The term peripheral or parenchymal should be employed only as indicative of the situation of the growth, and not as descriptive of its histopathologic character. This manner of classification is simple and aids materially in description, especially that contributed by the roentgenologist.

Peripheral. Peripheral carcinomas are rare and are not formally included in our series because they are almost invariably inaccessible to the bronchoscopist and therefore do not conform to the requirements established; that is, that diagnosis was made from the examination of tissue removed directly from the growth during bronchoscopic examination. Little can be said of them from the standpoint either of symptoms or of clinical signs. Usually there are none. The diagnosis of a lesion becomes dependent, almost always, on examination of roentgenograms. Even such examination, however, is likely to demonstrate a lesion and not to differentiate it as carcinoma, and it is even less likely to classify as a primary growth the lesion believed to be carcinoma.

Cough, bloody expectoration, or a single hemorrhage, pain in the thorax, and the development of metastasis, are the symptoms and signs that may appear, and require roentgenologic examination of the thorax for demonstration of a lesion. Occasionally, we have discovered unsuspected lesions during general examinations or those conducted on patients whose neurologic examination has served to estab-

lish a diagnosis of tumor of the brain. Two such cases have come to our attention in the present year.

Bronchial. It has seemed wise to make a composite picture of the patient having bronchial carcinoma. In 61 per cent of cases, the patients are between the ages of forty-six and sixty years, and 66 per cent are men. In 3 per cent of cases, there will be no symptoms, and the diagnosis will be arrived at during general examination, or it will be made on examination for some other complaint. In 97 per cent of cases, cough, loss of weight, bloody expectoration, dyspnea, and pain in the thorax, make up the syndrome. In groups of cases, certain variations in percentage of incidence occur. In the two reports from The Mayo Clinic, the chief symptoms occurred as follows:

Symptoms	First report, per cent	Second report, per cent
Cough	90	84
Bloody sputum	62	60
Dyspnea	54	70
Pain	48	67
Loss of weight	80	87

Although the patient may confine his complaint to one or more of these five major symptoms, yet these may be combined with a syndrome appearing less frequently, which, however, must be recognized as part of the symptomatic picture. The frequency of appearance of symptoms is as follows: hoarseness or fatigue in speech, 7 per cent; fever, 54 per cent; and chill, 14 per cent.

During the course of the examination certain signs appear with sufficient regularity to earn for themselves a place in the picture of bronchial carcinoma. Of these signs, bronchostenosis takes first place. It was found in 66 per cent of our cases, either producing simple atelectasis or promoting suppurative sequelae which, in order of frequency, were grouped as bronchiectasis, abscess, or empyema. It is mainly in the cases of bronchostenosis that fever, chills, anemia, and leukocytosis appeared. These symptoms, however, may occur in ulcerating lesions without demon trable stenosis. Secondary anemia with the estimation of hemoglobin under 65 per cent, occurred in 34 per cent, and more than 10,000 leukocytes occurred in 40 per cent. Stridor due to stenosis produced by a lesion situated below the bifurcation, occurred in 33 per cent, and changes in the voice, the result of injury of one of the recurrent laryngeal nerves, in 7 per cent. Pleural effusion occurred in

only 10 per cent of the group; this percentage is probably too low, but perhaps no lower than the percentage of complications mentioned. We were not able to observe our patients throughout the course of their illnesses from onset to death, and have attempted to describe the patient who is still ambulatory. At later stages of the illness, complications become increasingly frequent. The character of the pleural effusion may be serous, serosanguineous, or frankly purulent. It may then be indistinguishable from the fluid resulting from tuberculous pleuritis or from postpneumonic empyema. It may be sterile or contain pus-producing organisms. Usualy it is a fluid which develops rapidly, often as a late complication, and contains only a few cellular elements. On rare occasions it may contain carcinoma cells. Rust and Randolph made a diagnosis of carcinoma by finding carcinoma cells in the effusion. Usually effusions are bloody accumulate rapidly after being aspirated, and each time become more and more distinctly bloody, until in time they resemble pure blood. Withdrawal of fluid does not relieve dyspnea or pain. Often it serves to demonstrate a tumor in the roentgenogram taken following aspiration, since it is then posible to visualize the hilar areas.

#### ROENTGENOLOGIC CHARACTERISTICS

In the revelation and identification of primary bronchial carcinoma, the roentgenologic examination is capable of rendering a threefold service: (1) by definitely demonstrating the existence of a pulmonary lesion; (2) by directing the clinician's attention in certain cases to the possibility that the lesion is bronchial carcinoma, thus stimulating further cooperative investigation, and (3) by making in most instances a specific diagnosis, the positiveness of which will necessarily vary with the frankness of the signs and the experience of the roentgenologist.

Almost implicit reliance can be placed on the roentgen rays to demonstrate a lesion. At the clinic, 97 per cent of the cases have presented definite evidence of pulmonary disease, and not rarely when the clinical manifestations are trivial, vague, or even absent. At least this contribution to the diagnosis can rather confidently be expected from the roentgenologist. How much further he can carry his interpretation obviously depends on the size of the primary growth, the emphasis and character of secondary roentgenologic phenomena, and the nature and extent of ensuing complications.

Roentgenologically, the cases may be divided into three groups: (1) in which the growth is too small to cast a discernible shadow but obstructs the bronchus and is exhibited only in the resulting atelectasis or bronchiectasis; (2) in which the shadow of the growth is plainly visible, and the obstructive phenomena or complications are obviously subordinate, and (3) in which complicating pathologic factors dominate the picture or conceal the primary lesion.

The first group comprises the early cases, and probably their earliest manifestation is localized atelectasis. This appears as a gauze-like shadow which extends more or less fan-like from the hilum toward the periphery of the lung and is of such slight density that the bronchovascular markings can be seen through it. Often an elevation of the corresponding arch of the diaphragm is associated with it and the heart and mediastinal structures may be displaced toward the affected side. If the bronchostenosis caused by the carcinoma has existed for a considerable time, bronchiectasis, with its characteristic mottled shadow, is likely to occur, and rarely this may be the sole discoverable sign. It is patent that neither atelectasis nor bronchiectasis is diagnostic of bronchial carcinoma, but they are commonly significant of bronchial obstruction, the cause of which must be sought. Only by bronchoscopy, with or without biopsy, can the cause be determined, and the roentgenologist should recommend this procedure, especially if there are indefinable features which suggest that the obstruction may be due either to a foreign body or to bronchial carcinoma.

In the second group, which is fairly large, the shadow of the carcinoma itself is manifest. Varying in size in proportion to the size of the growth, the shadow is centered on and occupies the entire hilum, and is seen in the sixth or seventh interspace posteriorly. It is roughly triangular, with its apex directed outward. Its outer border is not clear cut, but extends strand-like along the bronchovascular markings. With it may be associated bronchiectasis or atelectasis. There may also be a few metastatic nodules in the opposite lung, and the shadow of pleural effusion in small or moderate amount may be evident. The entire picture, the central feature of which is the shadow at the hilum, is almost pathognomonic.

The third group, which includes advanced cases with extensive complications, offers many difficulties in diagnosis. There are varied combinations of a mass at the hilum, atelectasis, bronchiectasis, abscesses or abscess cavities, metastasis, and pleural fluid. Often the picture is so complex that diagnostic analysis seems impossible. Usually a key to its solution will be found in the hilar mass, which, large or small, is focused on the hilum. If metastasis is so

widespread that it seems to have come from extrathoracic sources, as ordinarily, the unwonted shadow at the root of the lung should prevent any hasty conclusions. If the entire lung or its affected portion is hidden by pleural effusion, the roentgenologist should insist on reexamination after paracentesis and should give special attention to the hilar region.

Possible difficulties in the differential roentgenologic diagnosis of bronchial carcinoma are almost innumerable. The condition can be confounded with the lymphadenopathies or any of the diseases that affect the mediastinal organs, or with benign tumors, abscesses, pneumonia, or tuberculosis. But probably the greatest obstacle to diagnosis is failure to think of bronchial carcinoma.

The roentgenologist only can discover the true peripheral primary carcinoma, which must be distinguished from a single metastatic carcinoma growing at a distance from the hilum. A single discrete peripheral tumor is almost impossible to identify clinically or roentgenographically with uniform correctness. In our clinical experience, such single discrete tumors within the parenchyma of the lung, discovered by roentgen rays, ultimately have proved to represent not only primary carcinoma, but also a tuberculous lesion, a conglomerate mass of fibrous tissue produced by silicosis, a discrete abscess, and metastasis from carcinoma elsewhere in the body. Rarely, such a discrete tumor may be a benign growth.

The roentgenologic characteristics of a single peripheral primary carcinoma serve to distinguish it from secondary forms of metastatic growths. The primary carcinoma is usually a single growth of homogeneous density, situated at a distance from the hilum and intimately associated with the parenchyma of the lung by means of its infiltrating surface. This undifferentiation of surface from the lung, roentgenographically, gives its shadow an ill-defined border. In contradistinction, the metastatic carcinoma is usually multiple, situated anywhere within the parenchyma of either or both lungs and its shadow usually has a discrete smooth outline, showing the absence of infiltrating characteristics. If the peripheral carcinoma of primary type becomes necrotic centrally, its appearance may be indistinguishable from an abscess, and when it grows toward the hilum, it may infiltrate the hilar and peribronchial areas to such an extent as to be indistinguishable from carcinomas arising within the large bronchi.

#### BRONCHOSCOPIC CHARACTERISTICS

The appearance of a bronchial carcinoma is in no essential sense different from carcinoma elsewhere.

The direct observation of bronchial carcinoma is simply attended with greater difficulties. To the trained bronchoscopist such technical difficulties may be overcome. If the growth is accessible, he is able to see and to examine the intrabronchial lesion. If the lesion is carcinoma it usually is fungating and ulcerating, and more or less completely occupies the lumen of the bronchus. In most cases it arises in one or the other of the main bronchial divisions and frequently it encroaches on the lumen of the trachea, not infrequently pushing upward beyond the carina.

Occasionally, the lesion is a flat, infiltrating mass proceeding toward the periphery. It may not be ulcerative, but it usually bleeds during instrumental investigation. Like all carcinomas, however, it invades the bronchial wall, thickening it, producing stiffness, and inhibiting the normal movements that occur during respiration.

The appearance of the lesion serves to distinguish it from that induced by tuberculosis involving the hilar regions. Tuberculosis rarely causes stenosis of a large bronchus. It rarely causes the secondary effects of reduction in the size of the lumen, bronchostenosis and the attending sequelae, atelectasis, bronchiectasis, or abscess. When these conditions are known to be present, they have features which distinguish their tuberculous etiology. Their identity is rarely confused with similar lesions resulting from bronchial carcinoma. It is fortunate that the two conditions do not more exactly simulate each other. Bronchoscopic examination should be reserved for the few cases in which the etiologic factor cannot be discovered otherwise. It should not be made in cases of frank active tuberculosis and is less imperative in cases of hilar tuberculosis when the nature of the hilar lesion can be determined by other methods, for example, biopsy of regional lymph nodes or the examination of pleural exudates. In cases such as those that constitute 3 per cent of our series, in which the two major diseases, tuberculosis and carcinoma, are associated, bronchoscopic examination may be required and may be approached with little timidity if the tuberculous lesion is fibrous or calcareous.

Bronchoscopic examination lends itself well to the diagnosis of those forms of benign tumors whose symptoms and signs may closely simulate those of carcinoma. Such tumors, recently described by Wessler and Rabin, include adenomas, fibromas, fibrolipomas, and polyps, and to these may be added those malignant polypoid tumors that may be encountered, and are the only malignant growths known to us that can be removed through a bronchoscope. The presence of such tumors, in each case

in our experience, was suggested by a hemorrhage of unknown cause. More unusual was the presence in one case of a dermoid which gave the appearance, symptoms, and signs of a malignant tumor with the exception of the characteristic shadow in the roent-genogram. It was removed by repeated coagulation.

The visualization of a lesion, the removal of tissue for histopathologic diagnosis, the removal of a polypoid growth, or the coagulation of benign growths that cannot be removed, are not the only purpose of bronchoscopic examination. Carcinomatous-like lesions produced by foreign bodies, such as bone, or calcareous material, or true stone in the lung, can be distinguished from carcinoma. In these ways, the examination complements and completes the clinical survey of intrabronchial lesions and makes a diagnosis possible without the involvement of serious risk.

#### TREATMENT

Reference has been made to the removal of tumors through the bronchoscope. This method is obviously confined to small lesions of papillomatous type and not to the infiltrating growths. It is impossible to remove such tumors by bronchoscopic methods. Green', Orton', and Jackson' reported the removal of malignant intrabronchial tumors, and Wessler and Rabin reported the removal of benign growths.

If a diagnosis of primary carcinoma could be made with any certainty on those isolated, single, peripherally placed tumors, surgical intervention would hold out a reasonable prospect of cure to make the procedure permissible. But these tumors are rarely found by clinical methods, and they are inaccessible to bronchoscopic observation. Lesions of this type are produced by a varied number of pathologic conditions, so that operative procedures have as yet received little popular support. In considering the surgical treatment of pulmonary carcinoma, Eloesser stated: "Central parenchymatous tumors hide themselves completely from inspection, percussion or auscultation. This is unfortunate. The removable tumors give no signs of their presence; it is the stricturing ones situated near the hilum, whose location makes them inoperable from the beginning, or the complicated ones with secondary bronchiectasis and abscesses, that we can recognize clinically. An unpromising outlook."

When a diagnosis of a hilar growth is made, the outlook from the surgical viewpoint is indeed discouraging. It is true, from reports, that successful removal has been accomplished and that various surgical procedures are recommended. These have been considered by Sauerbruch<sup>4</sup>, Brunn, Eloesser, Meyer,

Lilienthal', Allen and Smith, and others, but at present the record of cures is pitifully small.

We have not employed surgical procedures in treatment. We believe that the inaccessibility of the growth, its high degree of malignancy, and the probability of metastasis, and the situation in the main bronchus, would require procedures accompanied by a prohibitive mortality.

Treatment by means of the implantation of radium directly into the tumor, using the bronchoscopic approach, has been employed within the last ten years. Yankauer, in 1921, treated a patient by this method, and two years later, Greene used the same procedure. Moersch has used the method in two particularly suitable cases in this series. Kernan and Cracovaner have combined the radium with frequent applications of surgical diathermy.

#### PROGNOSIS

The time of onset of the disease is so indefinite that it is difficult to estimate its duration. It would seem probable that most patients live approximately one year after recognition of the disease. In Vinson's report14 15 of cases in which radium or roentgen-ray treatment was employed exclusively, a certain degree of encouragement is permissible. Although thirty of fifty-four patients treated in this manner lived only ix and a half months, yet ten were alive, much improved or well, after fifteen months, and two lived more than three years. One is alive and well after four years since the beginning of roentgen-ray treatment. Vinson's records since the last publication add to our enthusiasm for the employment of roentgen treatment. There is little doubt that patients so treated outlive by many months those who are un-

There is hope of changing the present gloomy prospect of cure. It lies in improvement of technic with radium, roentgen rays, and operative procedures.

#### BIBLIOGRAPHY

1. Allen, C. F.; and Smith, I. S.: Primary eareinoma of the lung with a report of a case treated by operation. Tr. Am. Climat. and Clin. Assn. 47: 201-220, 1931.

2. Brunn, Harold: Primary eareinoma of the lung: report of two operative eases. Arch. Surg. 12:

406-436 (Jan.) 1926.

3. Eloesser, Leo: Primary tumors of the lung. Arch. Surg. 10: 445-468 (Jan.) 1925.

4. Ewing, James: Neoplastic diseases. Ed. 3, Philadelphia, Saunders, 1928, 851-861.

5. Fortune, C. H.: A statistical study of the coincidence of malignancy and tuberculosis. Ann. Int. Med. 3: 495-500 (Nov.) 1929.
6. Habliston, C. C.: Intrathoracic malignancy.

6. Habliston, C. C.: Intratnoracle mangnaney. Tr. Am. Climat. and Clin. Assn. 47: 221-233, 1931. 7. Kernan, J. D.; and Cracovaner, A. J.: Careinoma of the lung. Arch. Surg. 18: 315-321 (Jan.)

1929. 8. Lemon, W. S.; and Higgins, G. M.: Plumonary fibrosis: experiments of short duration. Am. Jour.

Med. Sc. 183: 153-164 (Fed.) 1932. 9. Meyer, Willy: Primary cancer of the lung. Arch. Surg. 18: 307-314 (Pt. 2. Jan.) 1929.

10. Moise, T. S.: Primary carcinoma of the lungs. Arch. Int. Med. 28: 733-772 (Dec.) 1921.

11. Rosahn, P. D.: The incidence of primary carcinoma of the lung. Am. Jour. Med. Sc. 179:

803-811 (June) 1930.

12. Rusk, G. Y.; and Randolph, V.: Anatomic findings in cases simulating pulmonary tuberculosis.

findings in cases simulating pulmonary tuberculosis. Jour. Am. Med. Assn. 82: 442-447 (Feb. 9) 1924.

13. Simpson, S. L.: Primary carcinoma of the lung. Quart. Jour. Med. 22: 413-449 (Apr.) 1929.

14. Vinson, P. P.: Treatment of primary carcinoma of the bronchus by radium and roentgen ray: report of a case. Proc. Staff Meetings of Mayo Clinic. 6: 145-147 (Mar. 11) 1931.

15. Vinson, P. P.: Primary carcinoma of the bronchus: report of seventy-one cases in which the diagnosis was made by bronchoscopic examination.

diagnosis was made by bronchoscopic examination.

Minnesota Med. 15: 15-17 (Jan.) 1932.

16. Vinson, P. P.; Moersch, H. J.; and Kirklin,

B. R.: Value of bronchoscopy in the diagnosis of

malignant conditions of the lungs. Jour. Am. Med.

Assn. 91: 1439-1442 (Nov. 10) 1928. 17. Weller, C. V.: Primary carcinoma of the larger bronchi: an analysis of ninety cases with regard to pathology, symptomatology and diagnosis, and report of a new case. Arch. Int. Med. 11: 314-333 (March) 1913.

The pathology of primary carcinoma of the lung. Arch. Path. 7: 478-519 (March) 1929.

Entdifferentiation in primary carcinoma of the bronchi and lungs. Jour, Cancer Res. 13: 218-238 (Oct.) 1929.

The pathology of certain signs and symptoms in

primary carcinoma of the lung: illustrative cases. Ann. Int. Med. 2: 725-746 (Feb.) 1929.

18. Wessler, H.; and Rabin, C. B.: Benign tumors of the bronchus. Am. Jour. Med. Sc. 183: 164-180 (Feb.) 1932.

#### MANAGEMENT OF CANCER OF THE BREAST

ALBERT SOILAND, M. D. Los Angeles, Calif.

(Read before the New Mexico Medical Society, at its Fiftieth Annual Meeting, held at Santa Fe, N. M., May 19-21, 1932.)

Considerable interest is manifest in the treatment of primary cancer of the breast by means of platinum-covered radium-element needles. For many years it has been observed that, when radium is used interstitially, a more intense action occurs than when a like amount of radium is employed upon a surface growth. It has also been observed that interstitial radiation produces a less severe reaction upon normal tissue cells. Despite this advantage, however, there was too much necrosis with implanted radium, until a few years ago, when metallic platinum was substituted for the baser metals as a covering filter, and we are now able to radiate freely within certain known limits.

For breast cancer we employ needles varying in length from one to six centimeters, and in thickness from two to three millimeters. Each needle contains from one to four milligrams of radium clement, determined by length, and these needles are plunged into the tissues surrounding the tumor, in positions which will place all malignant-cell-bearing areas under a direct crossfire. If we are dealing with a radiosensitive malignant mass, a definite clinical cure may be expected from this method of treatment. Unfortunately, this much-to-be-desired result is still a probationary one. As yet, no medium has been found which gives positive diagnostic assurance of conditions extending beyond the obvious mass in the breast. In the absence of palpable nodes, we have no definite knowledge as to the ramifications and extent of the wandering metastatic cells. It is true that we may be so fortunate as to have only a primary growth, in which case either a simple mastectomy or radiation will effect a clinical cure. We must, however, abide by the time factor to verify our diagnosis in such an instance; even the most careful pathologist cannot be certain from the specimen examined whether or not a few cells may have escaped beyond the evanescent capsular zone of the neoplasm. Again, while the average breast cancer has been found to be radiosensitive, there are many wherein definite cancer-cell colonies are not killed by radiation and, in such cases, a clinical cure is im-

Another factor to be reckoned with is the mechanical one—the skill and knowledge required to place all radium needles in position which will insure the destruction of the scattering invaders as well as the parent growth. With this problem we are now intensely concerned; feeling that there is a great deal yet to be learned, particularly with regard to the technic. However, our relatively limited experience with interstitial radiation in breast cancer does not warrant thoroughly positive conclusions, and we are convinced that we cannot and must not relinquish surgery. Should time prove that the method under discussion offers more five-year clinical cures than the best and most modern surgical skill, conclusions will then be obvious.

There is still considerable skepticism as to the value of radiation in the breast, and I admit that this is a reasonably debatable point. A leading surgeon in the East has called our attention, through personal correspondence, to the fact that small cancer-cell groups detached from the parent group are not always within the lethal firing line of radiation, and

supports his observations with slides showing active cancer cells in such a field. Rightfully, he raises the question as to choice of treatment under these circumstances, but, on the other hand, anyone who has seen the epochal motion film of cancer cells in vitro, bombarded and killed by radium, as demonstrated by Canti of Cambridge, cannot help being convinced of the rationale of radiation therapy. The responsibility of the radiologist, however, is no greater than that of the surgeon, for surely more surgical operations are performed by unfinished surgeons on inoperable cancer of the breast than there are patients with operable breast conditions treated by ignorant radiologists. The best results will always be achieved when the clinician, the surgeon, the pathologist, and the radiologist combine their clinical knowledge at the bedside of the patient.

Referring again to my viewpoint of breast-cancer treatment based upon our most recent experience, it must be remembered that radium implantation is strictly a surgical procedure and is quite frequently combined with frank surgery. Obviously, every patient with a node or mass in the breast must be studied and then treated in accordance with our best judgment. Every patient with a breast lesion or tumor, irrespective of whether it is primary, secondary, or hopelessly inoperable, is subjected to a saturation dose of extreme short-wave x-rays. After all x-ray and lymph edema has subsided, which takes approximately fourteen days after the last treatment, a careful group examination and consultation is conducted. If we have been treating a mastitis, with or without inflammatory glands, no pathology will be found. The same is true with some cases of early carcinoma, but such patients are required to report every three weeks until we are satisfied that the expected results have been attained. With a primary carcinoma, however, there usually remains some remnant of the tumor after the x-ray treatments, and these patients are advised to have radium implanta-

The mass is then measured and, if there is no skin involvement and there are no palpable nodes, a sufficient number of needles are plunged in a manner to completely encircle and encompass the growth, bearing in mind that it requires approximately one milligram of properly screened radium to completely destroy all malignant growth within one square centimeter of tissue over a definitely fixed time period. This is usually accomplished in from seven to ten days, depending on the radio-responsive nature of the cancer cells. Part of this treatment consists of blocking all lymphatic channels leading from the

breast, by additional radium needles, and, in the presence of palpable nodes, the implantation is carried on to the limit of safety permitted in the presence of the larger vessels, nerves, and bone structures. In the primary group cases, just described, we do not recommend subsequent surgical removal, although we are aware that this is customary in some of the better-known clinics. If we are not satisfied with the progress of a radium-implanted breast after a few months' observation, a further implantation treatment can easily be given.

Our second large group with extensive infiltration, skin involvement, and ulceration is subjected to a mastectomy, by means of the radiotherm, after the x-ray reaction has subsided, and all necrotic metastatic nodes are removed at the same time. Following this, the radium implantation completes the operation in the manner already described.

In our third and largest group—the secondary and recurrent cases—we have little to offer by interstitial radiation. It is gratifying to find that patients of this character often show remarkable palliative results frdm short-wave radiation, using either the radium pack or high-voltage x-rays.

It is to be sincerely hoped that the research work now going on in different parts of the world, particularly that directed towards super-short-wave x-ray generation, will before long place in our hands a powerful weapon of offense, increasing our usefulness and adding to our success in the battle against mankind's unrelenting enemy—cancer.

# THE OBJECT OF THE CANCER COMMISSION

C. G. TOLAND, M. D. Los Angeles, Cal.

(Read before the Fiftieth Annual Meeting of the New Mexico State Medical Association, at Santa Fe, May 20, 1932.)

The menace of cancer has never been more acute than at the present time. It recently has jumped from sixth to second place as a cause of death in the United States and its apparent yearly incidence has increased by two per cent. Never has there been a more concerted and united attempt, on the part of layman and physician alike, to control cancer, than today.

Propaganda and publicity have brought to the attention of the people at large the necessity for immediate investigation of suspicious lesions. The laborers in cancer research are unceasing in their at-

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tempt to determine the cause of cancer but, in spite of their brilliant and tireless efforts, we still must rely on the individual physician and his ability to recognize cancer early.

We are seeing more people with early cancer than before, but we also are seeing more people with hopeles ly advanced cancer.

Either cancer is undeniably on the increase, or the patient with cancer is waiting too long before appearing for examination, or, lastly, we as physicians are overlooking many of the earlier cancerous lesions.

The scope of cancer control is national in extent. National organizations for the control of cancer are functioning efficiently in the education of the public. Locally, however, it becomes the duty of the state medical society to arouse the individual physician to a sense of his duty and responsibility concerning the early diagnosis and treatment of cancer, and also to reach some common ground of agreement regarding the criteria for such diagnosis and treatment.

It was such a desire on the part of the California Medical Association that led to the formation of the cancer commission. It was created by the house of delegates at the 1931 meeting, through the suggestion of Dr. Lyell Kinney, the retiring President. It was a serious effort by the California Medical Association to control the present cancer mortality. The Commission was appointed by the President, Dr. Junius B. Harris, and consists of two pathologists, five surgeons, and two radiologists. These men are responsible for the policies and conduct of the commission, but the actual work is carried on by various committees.

In the resolution adopted for the establishment of the Commission, three main purposes were outlined: First, the education of the medical profession in the early diagnosis of cancer; second, the provision of more adequate facilities for the diagnosis and treatment of cancer patients; third, the encouragement of cancer research on the nature, cause, behavior and treatment of cancer.

Regarding the last point, it should be understood that the cancer commission has no intention of undertaking any type of cancer research, for that involves millions of dollars of endowment and a large teaching organization. They do intend to stimulate and encourage scientific research and to coordinate that research for the practical use of the profession.

It was believed that the combined judgment and experience of the members dealing with cancer in California should constitute the basis for all criteria of diagnosis and treatment. To this end, a commit-

tee on professional information and medical education was assembled, consisting of a large group of surgeons, pathologists, radiologists, internists, and other specialists. This group was divided into subcommittees to consider the various types and locations of cancer. In its particular field, each committee is conducting a survey of the early symptomatology, correct methods of diagnosis, and adequate treatment. The work has evoked enthusiastic cooperation and serious efforts by a large number of men throughout the state. Questionnaires have been sent out to different members for the purpose of determining different opinions regarding diagnosis and treatment.

These committees are rapidly crystallizing and assembling the data which shall soon be available to every physician in California. Some of the reports are already in the hands of the Commission.

The next object of the Commission is to make this information available to every physician in California. Another group of members has been assembled to form committees on extension courses, both in northern and southern parts of the State. The program includes lectures, conferences, and clinics, throughout the State, also yearly meetings with all of the county medical societies.

The information from the Commission will be broadcast through California and Western Medicine and special bulletins. Further clinical conferences and exhibits are planned at state meetings. This year Dr. Robert Greenough, chairman of the Malignancy Committee of the American College of Surgeons, was the guest speaker.

Thus the Cancer Commission has inaugurated a program of professional education, better to prepare members of the California Medical Association in the carly diagnosis of cancer. When this project has attained sufficient momentum, the Commission, with the direction of the Council, will attack the problems of better facilities for the treatment of cancer and of education of the public.

I have brought this short report to you because much has been accomplished this year by the various committees. We have discovered many thinking men in the State who have already done a great deal toward the education of their own clientele in the recognition of suspicious lesions and suspicious symptoms in different parts of the body. Such education brings the patient very early to his physician. Second, I feel that your State Association might be greatly interested in an organization of this type.

It is not extremely expensive to organize and conduct such a Cancer Commission. The Council of

the California Medical Association allowed the Cancer Commission \$4500.00 last year. This Commission spent \$1500.00, and again this year the Council allowed our budget to be made up to the \$4500.00.

We have a full-time secretary and, for the headquarters of the Cancer Commission, we have been given space in the main office of the California Medical Association, in San Francisco; so you see there has been great cooperation all the way through, simply because all of our members are very anxious to have in their possession the correlated facts about cancer and its treatment. Also, not a single member has been asked for any personal donation to carry on the work. They know that we are not trying, as an association, to conduct any impracticable experimental work, and are interested purely in useful clinical truths.

There are about four states in the Union that have such a commission appointed by the State Medical Society.

It is imperative, in a commission of this type formed by any state medical association, that the exceutive committee be composed of men who are very much interested and who are especially adapted for such work.

We have been very fortunate in this respect. Dr. Charles A. Dukes, of Oakland, Dr. Alson R. Kilgore, of San Francisco, and Dr. Henry J. Ullmann, of Santa Barbara, California, have unselfishly given their time until at present our Commission is in full wing.

I wish to show the type of questionnaire sent to the various committees. I would also like to read to you a few paragraphs from the report, of the committee on Gynecological Malignant Tumors, given at the last meeting of the California Medical Association in Pasadena. I have had permission to present this study to you by the Executive Committee of the Cancer Commission of the California Medical Association, hoping that your Association may become interested. I am pleased to be allowed to present this subject before you. The outstanding fact has been the marvelous cooperation we have had from the members of the California Medical Association in carrying on this study. We believe there will be a distinct progress toward the reduction of cancer mortality wherever such a commission functions.

QUESTIONNAIRE FOR COMMITTEE ON GYNECOLOGICAL MALIGNANT TUMORS

CANCERS OF UTIRUS

Prevention:

Do irritant lesions predispose, such as:

- 1. Retention cysts.
- 2. Erosions.
- 3. Scar tissue.

What corpus lesions predispose?

Would you treat erosions in young unmarried women?

How should lesions one and two be treated? Cautery (What methods are to be advised?) Surgery (Amputation )

(Sturmdorf )

(Other methods)
Is there validity in the advice to wait till child-bearing period is ended?

Have you seen carcinoma of cervix follow adequate treatment by cautery or plastic of cervical lesions?

Should all cervices be examined and repaired at time of parturition?

In hysterectomies for benign growths should the cervix be left?

In the nulliparous?

In the parous?

Only when cervix lesions of potential malignancy importance can be excluded?

Can they ever be excluded in the parous women?

If the cervix is not removed should its mucosareceive special treatment, such as coning it out from above or below (with knife? with cautery?)

Should that apply in both parous and nulliparous women?

#### DIAGNOSIS

At what age should periodic examination be advised?

What should be the scope and character of such examinations?

What are the indications of diagnostic curettage? Is frozen section diagnosis permissible? Is it ever proper to wait for other methods of tissue examination or should treatment be carried out at the same scance?

#### TREATMENT

Class 1. Of cancer limited to cervix.

Class 2. Infiltrating uterine body or vaginal walls.

Class 3. Invading parametria.

Class 4. Involving in addition to parametria, the iliac and other glands.

Class 5. Adenocarcinoma of corpus. In what classes is surgery indicated?

- A. Complete pelvic dissection (Wertheim).
- R. How would you treat corpus carcinoma—simple hysterectomy, subtotal, pan, Wertheim or vaginal?
  - Is the recent suggestion that subtotal be done, leaving the cervix for future radium implantation, to be considered?
- C. Cautery (in what class of cases?)
- D. Cautery plus hysterectomy?
- E. Surgery (knife or cautery) plus roentgen deep thorapy? Before? After? Both?
- F. In what classes is radium indicated before

or after any of the surgical methods? Dosage?

Is the grading of curettings of value in the determination of treatment?

In what classes is radium indicated as the main treatment and how should it be used?

- A. Regaud, long application of small doses, 5000 to 10,000 mg. hours.
- B. Stockholm method, three applications completed in one month, about 7000 mg. hours, in all.
- C. Describe a better method, if any.
- D. Is roentgen radiation alone ever indicated?

The Committee should make some recommendation regarding chorionepithelioma.

#### PREVENTION

Should redium be used after removal of hydatidiform mole (T. J. Watkins)? Dosage?

How should recurrence of bleeding following removal or expulsion of mole be treated?

Has thorough curettage after abortions any prophylactic value?

If bleeding recurs a few weeks after such curettage should the operation be repeated for biopsy?

Are there any findings at this stage, such as the arrangement of or large groupings of Langhans' and syncytial cells, in the absence of definite new growths, which warrant hysterectomy?

Would the presence of bilateral ovarian cysts influence your judgment and treatment of uterine bemorrhage associated with fetal cells in the uterus?

#### OVARIAN TUMORS

Diagnosis:--

Do you regard proliferating ovarian cysts as potentially malignant?

Do you advise expectant treatment of ovarian cysts or tumors which are not causing symptoms?

In the presence of papillary serous cyst involving one ovary, do you?

- 1. Remove involved ovary?
- 2. Remove both ovaries?
- 3. Remove both ovaries plus hysterectomy?

How do you treat peritoneal transplants from such tumors?

- 1. No treatment?
- 2. Cautery knife?
- 3. Dissection of transp'ants?
- 4. Postoperative radiation or deep x-ray? ?

#### OVARIAN CANCERS

Outline treatment of ovarian cancer without evidence of metastasis (conservative or radical removal).

Outline treatment of ovarian cancer with metastasis, i. e.,

- 1. Removal of primary tumor completely.
- 2. Removal of primary tumor incompletely.
- 3. Radiotherapy.

Do you consider that the recovery of hyperplastic endometrium, secured by diagnostic curettage for blending, in a woman long past the menopause, is indicative of an ovarian neoplasm?

#### VAGINAL NEOPLASMS

Do you regard pruritus vulvae, kraurosis vulvae, leukcplakia vulvae, senile vaginitis, as precursors of vulval or vaginal neoplasms?

Iñow do you treat these conditions? x-ray or radium? ovarian extracts? resection of involved tissues?

Vaginal or vulval carcinoma.

Treatment:

Local removal followed by deep x-ray or radium?

Wide resection and superficial and deep lymph gland dissection?

Radiotherapy—technic?

GYNECOLOGICAL TUMORS COMMITTEE (To include the vulva)

- 1. Symptoms suggesting cancer, e. g., character of bleeding and discharge, etc.
- 2. Pre-cancerous conditions treatment adequate care after childbirth as a prophylactic, e. g., cervical repair.
- 3. Diagnosis—biopsy and curettage (value of, safety, under what circumstance justified).
- 4. Radiation vs. surgery in cervix and corpus cancers—extent of operation—indication for radiation (is radiation to be accepted as procedure of choice in cervix cases?)

Is hysterectomy the best treatment in all corpus cases? i. e., is the grading of curettings of value in the determination of treatment?

- 5. Radiation—dosage—screening placement—is burying needles or radium seeds into the cervix acceptable?
- 6. Ovarine tumors—classification of cysts—extent of operation—radiotherapy—question of leaving uterus as a holder for radium (Heyman, Stockholm).
  - 7. Relation of fibroids to malignancy.
- 8. Vulva and vagina—pre-cancerous conditions—kraurosis, senile vaginitis—treatment—lymph-gland dissections? Radiotherapy—when indicated—technic?

### FROM REPORT OF COMMITTEE ON GYNECOLOGIC TUMORS.

Cancer of the cervix naturally presents itself for first consideration.

The discussion centers upon the lesions popularly known as erosion of the cervix. Strictly, there is no crosion in the sense of tissue loss, at least not at the time it usually presents itself for treatment. In its inception there probably was loss of epithelium in the infected area in the vicinity of the parturition wound or other agency which caused it, followed by growth outward and over this denuded surface of the gland-bearing columnar-cell epithelium of the cervical canal.

This g'andular and epithelial hyperplasia, called crosion, merits a name more in keeping with its histo-pathologic character. Eden and Lockyer propose to call it proliferative adenoma of cervix and Bailey suggests perioricular cervicitis.

It is always inflammatory in origin, usually through birth injuries in the parous and through

mechanical agencies in the nulliparous. A few exceptions occur in virgins, and they are possibly congenital due to failure of the columnar epithelia to recede within the external os.

Erasians occur in 75 per cent of parous women and in 25 per cent of the nulliparous.

Retention cysts are usually ascribed to attempts at healing, that is, the replacement of the columnar epithelium with normal squamous epithelium, which often obliterates the gland openings. The columnar epithelium seems originally to be sent out as more capable of coping with the inflammatory irritation. When it succeeds and the round-cell, irritative, subepithelial infiltration recedes, return to normal takes place, the red columnar epithelium being replaced by the squamous-cell variety.

Your Committee stresses birth injuries as the important first event in the sequence toward cancer, and ercsion as the stepping stone to be destroyed.

Ninety-seven per cent of the cancers of the cervix occur in parous women, all of whom have had cervix injuries, as a matter of course. The other three per cent probably occur in those nulliparous women with cervix erosions of infectious origin. The evident lesson is, first, that all cervices should be examined at time of parturition, and routinely repaired; second, that all erosions in both the parous and nulliparous should be treated until replaced by normal squamous epithelium (Boller, Costolow, Craig, Depuy, Dukes, Eder, Enge, Ewer, Graham, Maxwell). The methods recommended by committee members are cauterization or plastic repair. The first is applicable in mild cases and can be carried out as an office procedure. Usually, linear strokes with a nasal platinum loop are effective. These are to be repeated monthly till cure is complete. Plastic repair of the Sturmdorf type is recommended for the severe cases, particularly at the menopausal age.

That these cervix lesions may be discovered, your Committee advises complete gynecologic examinations yearly after marriage, and after thirty in all.

This education of the public must be carried on by physicians among their clientele, if the profession is going to meet its urgent obligation in this intensely important matter of cancer prevention.

Cancer of the cervix after subtotals: Cancer of the cervix stump left at subtotal hysterectomies occurs often enough to warrant consideration. Some of our members do panhysterectomies for growths when the woman is parous, upon the assumption that her cervix, having been wounded, is always vulnerable (Eder, Ewer, Maxwell). However, if it is agreed that erosion is the great etiologic factor, it seems reasonable to leave a cervix free from that lesion and not otherwise badly damaged (Boller, Costolow, Craig, DePuy, Dukes, Enge, Evans, Graham, Schaupp, Tollefson). To be safe, it is suggested that the cervical mucosa, including that of the portio immediately surrounding the external os, be destroyed (Boller, Ewer, Graham, Maxwell). This is satisfactorily done by cauterizing the lower part of the caral and coning out the upper part with the knife.

Diagnosite curet'age: The opinion prevails in

some quarters that corpus cancer is relatively rare, less than 5 per cent of the total of uterine malignancies. Members of this committee report from their experience 15 to 30 per cent (Costolow, Eder, Ewer). This indicates the necessity of curettage for biopsy in an irregular idiopathic bleeding, especially after the age of forty. All members subscribe to this. Treatment should be carried out preferably at the same seance after frozen section examination, or as soon as satisfactory tissue identification can be made.

Treatment: For discussion of treatment, cancers of the uterus were divided in the questionnaire into five classes based upon the parts involved.

Class 1. Cancer limited to the cervix.

Class 2. Infiltrating uterine body or vaginal walls.

Class 3. Invading parametrium.

Class 4. Involving, in addition to parametrium, the iliac and other glands.

Class 5. Adenocarcinoma of corpus.

The Committee is nearly unanimous in its opinion that the Wertheim panhysterectomy, if used at all, should be limited to cases in classes 1 and 5, but there is a majority opinion against the procedure and in favor of radium and deep x-ray in class 1.

In class 5, there is a feeling that panhysterectomy is sufficient, without dissection of the parametrium, and that, if there is any pericervical infiltration, the case should be handled with radium and deep x-ray. Surgery has been so successful in this class of corpus cancer that the Committee is slow to advise any change to radium and x-ray, but it must be admitted that these agents are also very reliable and can be used with much confidence when surgery is contraindicated.

All cases for which Wertheim surgery is selected should receive full radium and x-ray radiation six weeks before the surgery. In this connection, one committeeman (Enge) makes the interesting observation that abdominal radiation predisposes to adynamic ileus in later operations, and advises that only radium be used before the surgery and the deep therapy afterward.

It is advised that classes 2, 3, and 4 be treated with radium and roentgen therapy only.

The recent suggestion that adenocarcinoma of the body of the uterus be treated by subtotal hyster-ectomy, the cervix being left for future radium implantation, seems illogical, particularly in the absence of evidence supporting the procedure.

It is felt that the grading of curettings has not as yet reached a position of much value in the determination of treatment, though in general it supports the treatment proposals stated above. For in tance, adenocarcinoma of the corpus is more often than not of grade 1 or 2, Broders, and hence should be more amenable to surgical treatment than the more malignant radio-sensitive squamous-cell corvix cases many of which are of grades 3 and 4 (Costolow). It is probably not wise, however, in the present state of our knowledge, to scale down the

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radium dosage because of this grading. The grading is of importance in prognosis.

Scarcely any two prominent clinics in the world use exactly the same radium technic, yet statistics from all that use adequate dosage show about the same results. All appear to use what may be described as modifications of the methods of the Radiumhemmet in Stockholm or of Regaud in Paris. Most of the committee members favor the Stockholm procedure.

A typical Radiumhemmet treatment is as follows: Three treatments are given: the second, one week after the first; and the third, three weeks after the second. Thus the treatment is completed in one month. Each treatment is the same, 33 to 40 mg. radium element in the uterus and 70 mg. in the vagina against the cervix. The latter is screened with 3 mm. of lead or its equivalent in other metal. The time of treatment is 22 hours, equivalent to 741-882 mg. hours in the uterus and 1500 mg. hours in the vagina.

This plan is varied in some instances. If the uterine body is involved, 46 to 75 mg. are applied in its cavity without risk to surrounding tissue. A small atrophic uterus may need only 25 mg.

If the vaginal surface of the tumor is large, 100, or even as much as 140, mg. are occasionally considered advisable for the first treatment. When this is done, the second and third treatments are reduced, to prevent the total vaginal dose from exceeding 4500 mg. hours.

Sometimes only two treatments are given, the interval being three weeks. In that case, the dose is reduced, experience indicating that 4500 mg. hours divided into three treatments is equaled by 4000 mg. hours at the most, given in two treatments.

Experience will suggest other modifications in screening, distance, and character of applications, but much reduction in total dosage is likely to impair results.

The long-continued small dose method of Regaud has many advocates. Fifty to sixty mg. of radium suffice for one treatment. Half the amount or less is placed in the uterus and the rest in or against the cervix. Screening equivalent to 1.0 mm. platinum is used in the uterus and 2.0 mm. in the vagina with the usual rubber covering. Distance is secured for the vaginal applicator by wrapping it with gauze or inserting it in the middle of an ordinary cork of the size desired. The distance helps in protecting the bladder and rectum. These applicators are removed daily for cleansing and replaced, the total time being five days or more, till the desired dose of 5000 to 10,000 mg. hours is delivered.

If the parametria are involved, external irradiation with roentgen rays is added to complete the treatment.

The theory of this long-continued small-dose method is that the cancer cells are certain to be exposed during their mitotic changes, when they are believed to be most sensitive to irradiation.

Chorionepithelioma: The suggestion that radium be used routinely after the removal of hydatidiform mole is not favored by the majority of the Committee. However, two (Costolow, Enge) use 200 to 1000 mg. hours, and another (Boller) uses massive doses. Bleeding recurring after removal of mole may be treated with 3000 or more mg. hours (Enge, Boller) or by hysterectomy after positive biopsy findings (Craig, DePuy, Dukes, Costolow, Eder, Evans, Graham, Maxwell, Schaupp, Tollefson).

Routine curetting after abortions, as a prophylactic, is not advised.

The presence of bilateral ovarian cysts associated with fetal cells in the uterus would warrant radical surgery, Wertheim (Boller, Dukes, Enge, Ewer, Maxwell). It would not warrant hysterectomy without evidence of uterine metastasis, in the opinion of others (DePuy, Schaupp, Tollefson).

Ovarian Tumors: The Committee is in general agreement that proliferating ovarian tumors should be regarded as potentially malignant lesions. Small cystic ovaries which are not causing symptoms may be safely treated by conservative measures, which must be controlled by frequent examinations. The insidious enset of true ovarian neoplasms demands careful checkup of any woman in whom the diagnosis of ovarian "cysts" has been made, since functional disturbances or pelvic symptoms are usually late in onset. It is generally accepted that proliferating serous cysts, in contrast to pseudo-mucinous cysts, have a tendency to bilateral ovarian involvement, although the process may not be contemporaneous; moreover, papillary tumors have a distinct tendency to malignant degeneration. The Committee is unanimous in advising bilateral salpingooophorectomy with hysterectomy when serous cystadenoma involve both ovaries. When only one ovary is affected, a conservative attitude is more prevalent. Craig, Evans, Ewer, Graham, Schaupp and Tollefson recommend removal of the involved ovary; Costolow and Enge advise conservatism if the patient is under 35 years of age; bilateral salpingocophoractomy, with hysterectomy, is advocated by Boller, DePuy, Dukes, Maxwell. All agree that peritoneal transplants from these tumors can be controlled by roentgen-ray therapy.

Ovarian Carcinoma: Primary ovarian cancer should be treated by a radical removal of the pelvic organs, followed by deep roentgen-ray therapy to the entire abdomen. In the presence of ovarian carcinoma with peritoneal metastasis, there is a diversity of opinion as to treatment. With the exception of Boller, who advises no treatment, the Committee recommends that the primary tumors and uterus be removed completely and deep roentgenray therapy be applied to the abdomen. If complete removal of the carcinoma is impossible, Costolow, Eder, Ewer, Maxwell, and Newell favor removing as much of the neoplasm as is possible and following this up by deep roentgen-ray treatment. This incomplete operation is effective in relieving pain and pressure symptoms and, while it may be regarded as purely palliative, Maxwell has seen several apparent five-year cures follow this procedure.

The significance of bleeding in a woman past the

menopause in whom diagnostic curettage reveals hyperplastic endometrium, is considered as strongly presumptive evidence of ovarian malignancy (Boller, DePuy, Dukes, Enge, Ewer, Graham, Maxwell, Schaupp). Craig and Tollefson consider such findings significant only in the presence of ovarian tumors. Maxwell has seen three cases of granulosacell carcinoma with no enlargement of the ovaries, in women past the menopause, with hyperplastic endometrium and uterine hemorrhage.

The majority of the members of the Committee regard leukoplakia and kraurosis vulvae as lesions which frequently terminate as vulval carcinoma, and advise treatment ranging from radiation to resection of the involved tissues. Newell sounds a warning in radiating leukoplakia, for, in his experience, it has always been followed by recurrence; and, by damage to the blood supply, may add to the danger of epitheliomatous alteration.

The Committee has no uniform treatment for vaginal and vulval carcinoma. Roentgen ray to regional lymph glands and radium for the local growths, are advocated by some members; others favor local removal of the growth, usually by electro-cautery knife with supplementary roentgen ray and radium to lymph glands. A wide resection of the carcinoma with removal of superficial and deep inguinal lymph glands and roentgen-ray therapy, are recommended by Craig, Enge, Graham and Maxwell.

DISCUSSION: SYMPOSIUM ON CANCER

DR. J. M. FLUDE (Los Angeles, Calif.): I am sure we have all immensely enjoyed these splendid papers on the clinical aspect of the cancer problem. The motion picture films are particularly interesting in that this is a rather new venture in the edu-

cational field.

As Field Representative of the American Society for the Control of Cancer, New York City, I should like to present for your consideration the cancer problem in its larger aspect, namely, the cancer control question. When you stop to consider, as Dr. Toland has told you, that cancer has jumped from sixth to second pllace as cause of death and that, in 1930, over 120,000 people died from cancer, you can readily see what an enormously important proposition it is becoming and that something has to be done about it. There is no question but that the program as inaugurated by the California State Medical Society is one of the first of its kind in the United States. The eyes of the entire medical profession are focused on the work these men are doing and there is no duobt but that they will uncover a lot of valuable information as far as the problems of diagnosis and treatment are concerned. The American Scciety for the Control of Cancer has been interested for many years in an educational program, so far as the public is concerned, carrying to it all the information we have about cancer. However, it has been felt recently that we need as much work among ourselves as among the lay public. Consequently, we have consolidated our efforts with those of the American College of Surgeons in correlating the work and trying to arouse an interest in the profession in regard to correlating our knowledge as to the proper treatment, and in the formation of clinical groups. The American College of Surgeons has recommended, in larger hospitals, the formation of clinical groups, where the men will meet at different intervals and proffer their services as a consulting

board for doubtful cases of cancer occurring in their local community. In the past year, there have been quite a number of these clinical groups started in tne United States, and in the next two or three years, in each city in the United States, it is hoped there will be at least one such group for this study. State programs have already been inaugurated in a number of states. As to the local problem in such a state as New Mexico, it is quite a different matter, in a state with as widely scattered a population as you have here, where the difficulties in transportation facilities are quite apparent, and, as a recommendation, it might be well if your President and Advisory Council would see fit to appoint a commission to consider the problem and work in conjunction with such a commission as has been appointed in California. The men in New Mexico could receive the advantage of the work that has been done in California without any of the hardships or additional expense, and I think that such a program might well be carried out here. If such commission would confer with the California Commission there might be an affiliation formed. The instigation should be in the Medical Society and not by any outside organization, either lay or professional. The State rublic Health Department should have charge of any educational program for the laity and any assistance the American Society can give will be furnished. This, I am sure, would work out to the best advantage.

DR. HUGH T. JONES (Los Angeles, Calif.): I wondered why an orthopedic surgeon was asked to discuss cancer of the breast and cancer of the bronchus, but guess I can say a little something on bone metastases of cancer of the breast. These cases are extremely painful and we must depend on the roentgenologist and men giving x-ray treatment in conjunction with the surgeon, to give palliative relief or pain in these very painful metastases. In Dr. Lemen's paper, I was interested in the question of ctiology. He finds very little cause or evidence of cause in the development of carcinoma of the bronchus, in associating it with a long-continued process in the lung. If I may carry it over into the orthopedic aspect, I would think of the long-continued suppuration from a bone. In osteomyelitis, we have such a long-continued process and I find quite often after many years of this drainage there is enough irritation of this pus on the skin to develop an epithelioma, so, if knowledge is worth anything, we might expect that a chronic irritation from a longcontinued suppuration of the lung might have something to do with the development of carcinoma of

the bronchus.

DR. C. H. GELLENTHEIN (Valmora, N. M.); I should like to ask if carcinomas of the bronchi in region of the lung are more prone to metastases than others.

DR. E. H. McINTYRE (Santa Fe, N. M.): In discussing Dr. Toland's paper, it certainly deserves a great deal more attention than can possibly be given at one meeting. In the light of present statistical studies made by individual state health departments, as well as by the Federal Government and many agencies, the fact that the incidence of death due to malignant neoplasms is rapidly increasing cannot be denied. It may be that greater precision in filling out the medical certificates of death is responsible in a small measure for some of this increase, but that it is responsible for an increase of some 30 per cent is not to be conceived, so we must accept the fact that there has been a large actual increase in malignancy. It is hoped, with the careful and more accurate completion of death certificates, insofar as cause of death is concerned, that future statistics will be more reliable. The present state of our knowledge is not sufficient to permit of the formation of such procedures for the suppression of this malady as have been successfully employed for the control of infectious diseases. However, a reduction in the incidence of malignancy becomes a question of knowledge. That the education of the general public constitutes a problem, the solution of which rests primarily with the health authorities, is apparent, and it would seem advisable and advantageous for a state cancer commission to cooperate with the state boards of health in promoting campaigns, so that the general public would be educated in accordance with the plans of the Cancer Commission. Such an educational program must result in the public becoming well informed in regard to cancer. Also, perhaps, with the establishment of cancer commissions, there would automatically arise a public demand, creating public sentiment which would achieve financial aid through legislation. I believe every state medical society should form within their organization a cancer commission, such as other states mentioned by Dr. Toland nave already done.

nave already done.

DR. TOLAND (closing): I am very glad to hear the discussion of Dr. McIntyre bring out the importance of the establishment of cancer commissions. The main point of the Commission now is to correlate the information we have on cancer and bring it before the medical profession, and then, as soon as possible, we intend to start work to educate the public and give it the benefits of the knowledge

we have attained.

DR. LEMON (closing): I appreciate very much the discussion of this subject. In our cases of cancer of the bronchus we found that 60 per cent were of the squamous type of carcinoma, 35 per cent were of the adenocarcinomatous type, and the rest undifferentiated. We found that 60 per cent were Grade 4, which means a very virulent cancer, and that about 30 per cent were Grade 3. It is very rare to find cancers of Grade 1. We had 14 per cent that had already formed metastases when we first saw them. Untreated cases live from seven and one-half to twelve months: treated cases usually live from fifteen menths to over four years. Metastases have occurred in the brain, chest wall, pleura, and in the arterial lymphoid nodes. This is a disease which is increasing. It formerly numbered 1 per cent of all cancers, now it has increased to 8 per cent. It is a disease that can be discovered clinically. The roentgenologist can give the correct diagnosis in 50 per cent of cases and can diagnose lesion in 97 per cent of cases. All lesions should be suspected to be cancerous. There are about 3 per cent of cases which have no symptoms whatever and are accidentally discovered.

# DIAGNOSIS AND TREATMENT OF ADENOMATOUS GOITER

JAMES W. HENDRICK, M. D. Amarillo, Texas.

(Read before the Fiftieth Annual Meeting of the New Mexico State Medical Society, held at Santa Fe, New Mexico, May 19-21, 1932.)

Adenomatous goiter is of clinical interest because it is the most prevalent type that the physician will see. If due cognizance is not given, untold damage will be done to the patient. The damage may be in the form of hyperthyroidism of later life, marked deviation of the trachea or pressure on important

structures in the area of the thyroid; and a good percentage become malignant. There are two types of adenomas: the fetal type, which is the less common of the two, and the so-called colloid adenoma.

The fetal adenoma is an encapsulated area of thyroid tissue, usually appearing as a solitary nodule resting on normal thyroid tissue. It is classified as a true tumor of the thyroid gland, having its origin in the interacinar cell remnants of Wolfler. The fetal adenoma, being an encapsulated tumor, is free from the periodic cycles of hyperplasia and involution common to the thyroid gland. As the name suggests, the tissue of the fetal adenoma simulates the tissue found in the thyroid of a fetus. The acini are not very well developed, and there is an absence of colloid. When the individual grows older, and growth of the tumor progresses, the acini become better developed, and colloid may be found in small amounts. There may be degeneration with cyst formation, and mild toxic symptoms may develop. Clute states that 90 per cent of the thyroid cancers have their origin in this type of tumor, and that at least 4 per cent of the fetal adenomas become malig-

Colloid adenomatous goiter occurs more frequently in the so-called goiter belts, but sporadic cases are observed throughout the United States. Often there is a history of a juvenile goiter which persists and becomes nodular, but there may be no history of a previous enlargement of the thyroid; and during the late twenties, a nodular growth is noticed by the patient or friends. The enlargement is caused by single or multiple growths, which may be limited to a part or the whole of one lobe, but more often are found in both lobes and the isthmus. Reinhoff is of the opinion that the number of nodules present depends on the number of exacerbations and involutions that have taken place within the gland.

This form of goiter, once present, is strictly a surgical condition, as it is not amenable to medical treatment. Its course is constant and progressive, and does not run in cycles like the exophthalmic. Willard Bartlett states that, "no matter in what period of life discovered, it is either a present or at least a potential source of discomfort and a menace to life and health, and that the adenoma is the most insidious destroyer of myocardial tissue known." C. H. Mayo says that about 60 per cent of the adenomas become toxic in middle life.

Influenza, tonsillitis, quinsy, bronchitis, physical strain, mental shock, and pregnancy may act as predisposing factors of toxicity in many cases. Whereas,

in other cases, toxicity develops without any apparent stimulating factors.

The consistency of the gland becomes firmer as toxicity becomes apparent. Many patients observe a certain amount of tenderness. The vascularity increases, although there is an absence of pulsation, bruit, or thrill. On section, the gland is of a brighter red color, and it is more fragile. In 1916 Goetsch found that, when toxicity developed, the mitochondria were increased. About 1920 Wilson noted that there was an increase in the activity of the parenchymal cells lining the old acini; also, there was a formation of new acini in the interacinar tissue. The earlier the toxicity develops, the more marked the pathological change. Whereas, in the gland that slowly becomes toxic, these changes are not so apparent.

The symptom complex develops slowly and insidiously in this type of goiter, requiring about three years after the onset of toxicity, before the patient is incapacitated. The cardiovascular system receives the brunt of the thyrotoxicosis. There are a gradual loss of weight and strength, mild tremor and nervousness, palpitation, nocturnal precordial thumping, dyspnea on exertion, and choking sensations.

Tachycardia is one of the first signs of toxicity in adenomatous goiter. The pulse rate will vary from 90 to 120, and it remains accelerated during the entire twenty-four hours. The rate of oxidation, or metabolism, is markedly increased in hyperthyroidism, that is, the tissues consume more oxygen, which necessitates an increased amount of oxygen to be carried to the tissues by the blood. To perform that duty, the heart must beat faster and more forcibly. Over a long period of time, that increased work will cause cardiac hypertrophy and, eventually, cardiac degeneration. Palpitation and dyspnea on exertion are observed early in this type of a case, as the resting pulse is rapid; hence, any exertion will call for a further increase of oxygen to the tissues. A further increase in the already rapid pulse rate, causes the patient to be conscious of the heart beats. As the toxicity progresses and the cardiac degeneration becomes more pronounced, periodic attacks of auricular fibrillation develop. If the toxicity is not removed, permanent auricular fibrillation results, and signs of congestive heart failure appear, with orthopnea, edema, and pulmonary congestion. Any patient who has tachycardia and myocardial symptoms should be examined carefully to determine if a goiter is present. In the event a goiter is present, a subtotal thyroidectomy should be performed. The careful estimation of the basal metabolic rate will be of benefit in determining if the toxicity is of thyroid origin. As the toxicity increases, so will the basal metabolic rate and tachycardia. It should be remembered that the basal metabolic rate is never as high in toxic adcnoma as in the exophthalmic type, and with other symptoms of toxemia present, a plus 18 or plus 20 is important. With marked toxicity in this type of goiter, the basal metabolic rate may not be more than plus 40 or 50.

The blood-pressure readings are of considerable importance. Both the systolic and diastolic pressures are increased, but the systolic pressure is increased out of proportion to the diastolic, producing a marked increase in the pulse pressure. For example, compare a systolic pressure of 146 and a diastolic pressure of 80, with a normal individual who has a systolic pressure of 120 and a diastolic pressure of 74. Aortic insufficiency is the only other condition that will give that much pulse pressure. As the toxicity progresses, the systolic pressure is increased, and hypertension results.

Cardiac decompensation, associated with hyperthyroidism, readily regains cardiac compensation when the thyroidism is removed. Whereas, cardiac decompensation due to other conditions, as intracartiac or cardiovascular-renal origin, does not regain compensation readily. The thyrocardiac with marked edema and congestive symptoms, when given proper cardiac management for a short period of time, can be taken safely through a subtotal thyroidectomy with an uneventful convalescence. Perhaps there is no place in medicine where we get as much improvement in cardiac conditions as we do in those resulting from toxic goiter.

Pressure symptoms are very common in adenomatous goiter. A roentgenogram should be made of the trachea and superior mediastinum in all cases of nodular goiter in which the lower poles cannot be palpated. Difficulty in swallowing is seldom complained of, due to the fact that the esophagus is a muscular tube and can be readily pushed out of its normal position without causing symptoms. However, the trachea is a semi-rigid tube, and pressure on it will cause a deviation and constriction of its lumen, and symptoms are readily noted. If the offending growth is unilateral, there may be a marked deviation, and the trachea will be pushed to one side. However, if the growth is bilateral, there may be marked compression, producing the so-called scabbard-shaped trachea. A small growth on the isthmus which is substernal causes an anterior-posterior flattening of the trachea and a marked stenosis.

A careful inspection of the larynx and the upper

part of the trachea should be included in the examination of the goiter patient. The recurrent nerves are in direct proximity to the posterior capsule of the gland, and any enlargement may cause pressure or displacement of the nerves. Paralysis of the vocal cords on one side, caused by a gradual enlargement of an adenoma, may not produce much change in the voice, as the vocal cords on the opposite side will over compensate. If a paralysis of the vocal cords on one side is noted, additional care should be exercised during the operation to prevent injury to the normal side. Judd says that unilateral paralysis of the recurrent nerves caused by goiter, is present in about five per cent of the cases.

X-ray pictures should be made of the neck and superior mediastinum in the anterior-posterior and lateral positions. By having the patient extend his head backward, and filling his trachea and bronchi with air, any abnormality of the trachea can be shown. The lateral view will demonstrate if the growth is encircling the trachea posteriorly. If there has been much degeneration within the adenoma, calcification may have occurred and will be shown more clearly in the x-ray picture.

The goiter may be completely substernal or subclavicular. X-ray examination of the trachea may reveal its presence, in which case there is a marked deviation of the trachea from the midline. Violent coughing or straining may cause the upper pole to bulge into the supraclavicular fossa. Hertzler recounts a case of a lady who had a substernal goiter, and when in society, she would wear the goiter below the clavicle. When attending her household duties, she would wear it above the clavicle. Finally, she nearly died in a fit of coughing at a social function; then she had it removed.

Hemorrhage into an adenoma is not an infrequent event. During the writing of this paper, I was called early one morning to see a patient who was being prepared for relief of a large colliod adenoma. Following a spell of coughing, she noticed a sudden increase in the size of the goiter. One hour later, there were marked respiratory symptoms, coughing, choking, and cyanosis. About 60 cc. of hemorrhagic fluid was aspirated from the tumor, with immediate improvement in respiration. If the hemorrhage is into a small tumor, there is pain and tenderness, simulating thyroiditis. But if the hemorrhage occurs within a large tumor, grave respiratory symptoms may develop rapidly, and produce a real emergency.

#### MANAGEMENT

Once established, nodular goiter does not respond

to medical treatment, whether toxicity has developed or not. If fetal adenoma is discovered in any period of life, it is well to remove it. Most thyroid clinics recommend the removal of non-toxic adenoma after the patient reaches thirty years of age. If removed before that age, there is a possibility of new adenomas developing, or small adenomas being overlooked and later giving trouble. However, if the adenoma is producing pressure on the trachea or other important structures in the area of the thyroid, it should be removed at any age found.

Better results have been obtained when iodine (in the form of Lugol's solution) was used in preparing the toxic patient for operation. A quiet room, where both physical and mental rest can be obtained, is of paramount importance. No cardiac treatment is necessary, unless there are signs of auricular fibrillation and congestive heart failure. Digitalis and a restricted diet will then prove to be of value.

#### BIBLIOGRAPHY

- 1. Reinhoff, W. F.: Relation of hyperthyroidism to benign tumors of the thyroid gland. Arch. Surg., Jan., 1926.
- 2. Wilson, L. B.: The pathology of nodular goiter, Am. J. Med. Sc., 165, 1923.
- 3. Von Eiselberg, A.: Diseases and injury of the thyroid gland, Sys. Pract. Surg., 1924.
- 4. Kline, B. S.: The origin of adenomatous goiter, Am. Jour. Path., 1, 1925.
- 5. Bloodgood, J. C.: Adenoma of the thyroid gland, Surg. Gynec. and Obst., 2, 1926.
- 6. Wilson, L. B.: Malignant tumors of the thyroid, Ann. Surg., 74: 1921.
- 7. Crile, George W.: The Thyroid Gland, W. B. Saunders Co., 1922.
- 8. Goetsch, E.: Functional significance of mitochondria in toxic thyroid adenoma, Johns Hopkins Hosp. Bul., 27: 1926.
- 9. Hertzler, A. E.: Diseases of the Thyroid Gland, C. V. Mosby Co., 1929.
- 10. Pemberton, J.: Substernal and intrathoracic goiter, Jour. Lab. Clin. Med., 3: 1917.
- 11. Von Breitner, B.: X-ray diagnosis of intrathoracic goiter, Lectures Univ. Vienna, Sept., 1930.
- 12. De Quervain, F.: Goiter, John Bale and Sons, London, 1924.
- 13. Von Breitner, B.: Injury to the recurrent laryngeal nerves by large adenomatous goiter, Lectures Univ. Vienna, August, 1930.
- 14. Judd, E. S.; New, G. B.: The effects of trauma on the laryngeal nerves, Ann. Surg., 1928, 257-262.
- 15. Bartlett, Willard: Surgical Treatment of Goiter, C. V. Mosby and Co., 80, 1926.
  - 16. Mayo, C. H., Quoted by Willard Bartlett.
- 17. Hertzler, A. E.: Mixed tumors of the thyroid, Arch. of Surg. 1187, 1928.
- 18. Speese, J.; and Brown, H. J.: Malignant degeneration in benign tumors, Amer. Surg., 648, 1921.

19. Clute, H. M.: Adenomata of the thyroid, N. Y. State Jour. of Med., Nov., 1928.

20. Ewing, James: Neoplastic Diseases. W. B. Saunders and Co., 1922.

#### DISCUSSION

DR. W. S. Lemon (Rechester, Minn.): Some basic factors may be briefly stated regarding the benavior of adenomatous gotter. It has seemed to us advisable to encourage surgical treatment in all cases of adenomatous gotter in which the adenomas are at least an inch in diameter. If there is a single adenoma, circumstances may be such as to make its removal advisable at any age. If multiple adenomas are present, it is usually advisable to wait until the patient is over twenty-five years of age. Multiple adenomas are in all probability better removed in all patients over forty years of age. They apparently do not begin to hyperfunction until after an average of fourteen years has passed following discovery.

The reasons for advising removal are three-fold. In the first place, because hyperthyroidism is very likely to develop and occur insidiously and do damage before the patient is aware of the symptoms of the disease. The production of increased amounts of thyroxin within the adenoma may occur before symptoms appear and this hypothesis is based on the assumpton that the thyroid gland normally produces approximately ¼ milligram of thyroxin each day. If the hyperfunctioning adenoma produces as much as ½ milligram, then the call of the body for thyroxin is satisfied if the gland itself produces ½. If the adenoma produces as much as ¼ milligram, the gland itself becomes at rest, but if the adenoma (or adenomas in multiple cases) produce more than ¼ milligram, then hyperthyroidism appears symptomatically.

The second cause has to deal with the matter of the growth of the adenomas, which sometimes progresses to the formation of even large tumors. This occurrence is attended with the danger of tracheal compression productive of an obstructive type of dyspnea, usually continuous, but subject to exacerbations and causing very marked stridor. Even fatal results have occurred as a result of this compression. The extension of the growing gland may be downward, and it is not unusual in patients past middle age to have them report that the size of the neck has decreased, while, on examination, a tumor can be located beneath the sternum. A substernal goiter then constitutes what is in effect a mediastinal tumor and it is oftentimes very difficult to differentiate it from other tumors in the anterior part of the mediastinum. They may be confused with aneurysm of the aorta, and the calcareous degeneration within them may assume the characteristics of the laminated calcium that occurs in aneurysms. The mere fact that they do not have expansile pulsation does not invariably clear the diagnosis. The one suggestive finding in substernal thyroid which separates it from other tumors of that locality, is the fact that they move on deglutition. If they are fixed in position, it may be impossible to distinguish them from other solid tumors. Rarely, extension may be in the retrotracheal position and, under those circumstances, the enlargement can neither be felt nor seen on x-ray. Then, they may involve one of the recurrent laryngeal nerves and produce a paralysis of the vocal cord on the side of the tumor.

In the third place, an adenomatous thyroid gland should be removed because one in sixty that we see in the Clinic are malignant, and they usually are of papillary type or may be described as adenocarcinomas. Most of the malignancies that occur in the thyroid grow within adenomatous structures and they occur at any time from childhood to old age.

The papillary type respond to treatment with radium, but the adenocarcinomatous type do not have either so good a prognosis or so prompt a response to treatment. Some cancers are encapsulated within the adenoma and these respond splendidly to surgical removal. Metastases from carcinoma of the thyroid usually occur within the lung or are seen in bone.

A diagnosis of carcinoma is attended with considerable difficulty because it does occur in any age group and because the physical characteristics can only with great difficulty be differentiated from that produced by thyroiditis, by calcification, or by hemorrhage into an adenoma. The hardness of the gland is not diagnostically different in any of these conditions and the rapidity of growth may be simulated by either thyroiditis or hemorrhage. When the gland becomes large, hard, and fixed, it usually is in the inoperable stage, but provides the first positive indication for a correct diagnosis.

The use of iodine in these cases has been discussed for several years, but it would seem probable that the effect really has to do with making adenomas more likely to hyperfunction. They have the tendency toward increased activity under all circumstances, but iodine apparently has the tendency to hasten activity.

DR. F. D. VICKERS (Deming, N. M.): I should like to ask Dr. Hendrick as to the value of x-ray treatment, especially in the case of small adenomas that may be highly secretive.

that may be highly secretive.

DR. HENDRICK (closing): I am very appreciative of Dr. Lemon's remarks. As to the time of removing adenomas, the age has moved up to around about thirty years. If removed too early, very small adenomas might be overlooked and there might be recurrence. In regard to x-ray treatment, I would not advise it in any type of adenoma. As to the exophthalmic type, sometimes when we have a patient very toxic to quiet him down for operation we have an x-ray man use the x-ray in addition to medical treatment, but I do not believe you would have happy results in the use of x-ray on adenomas.

#### ARTHRITIS, UNDER THE LIGHT OF RECENT RESEARCH

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Triumph has not yet been achieved over that ageold tormentor known as chronic arthritis, or "rheumatism." It is hoped, however, that the recent wave of interest in the disease will overcome the conventional practice in which teeth and tonsils are removed empirically, and the propensity for synthetics of unproved specific value.

The exasperating problem of relieving the local joint symptoms often distracts attention from the fact that the body is sick as a whole. Only when there is a fertile soil for further invasion of the discase, do the symptoms of joint structures give evidence of rheumatic involvement. Really, a small

minority of the individuals harboring dead teeth or cryptic tonsils develop arthritis.

The American Committee for the Control of Rheumatism, headed by Ralph Pemberton, is gaining a wide influence which will gradually accomplish a general enlightenment on this disease. Acknowledging its economic importance, in that it has a greater disabling influence than any other disease, the committee is bringing about the cooperation of various specialties of medicine, the clinician, the roentgenologist, the bacteriologist, the pathologist, the physiologist, and the chemist.

Three phases of the subject have received greatest advancement: (1) An understandable classification has been proposed. (2) The etiological view has penetrated deeply into the biological, biochemical, and bacteriological fields. (3) Treatment is based more on classification and etiological significance.

#### CLASSIFICATION

Accuracy of diagnosis is the keynote of successful therapy. In the past, classifications have not contributed to an understandable differentiation because they were based on clinical manifestations. Such terms as "rheumatoid arthritis," "gout," osteo-arthritis" and "arthritis deformans," are not indicative of a pathological or etiological distinction. It now is well established that all clinical forms may be classified under two chief types. One: those which produce proliferation of synovial tissue, and atrophy of bone; two: those which produce a degeneration of cartilage and hypertrophic bone growth on joint margins. The first great type occurs chiefly in those under middle age, has an infectious complexion, involves the synovial tissues, and has a tendency to bony ankylosis. The second great type is seen more frequently in those past middle age, has more of a metabolic alliance, involves the joint in physiological degenerative changes, and does not ordinarily result in bony ankylosis.

#### CLINICAL FEATURES

The proliferative or atrophic type may be recognized through any of the following clinical features:

- 1. Mono or multi-articular joint involvement, with varying distention of joint capsule.
- 2. Peri-articular ligamentous involvement, such as commonly follows trauma in the shoulder, knee, or spine.
  - 3. The neuritis form, as in sciatica.
- 4. The bursal affection, such as in subdeltoid or os calcis bursitis.
- 5. The lumbago and torticollis affections of the muscles.
  - 6. The tenosynovitis conditions.

The degenerative or hypertrophic form has the following predominating clinical types:

- 1. Mildly painful fingers, with Heberden's nodes.
- 2. The dry, non-swollen knee and hip joints, with marked crepitation, but comparatively little disability.
- 3. Osteo-arthritis of the spine, with the slowly progressive, mildly disabling bone-lipping prolifera-
- 4. Senile arthritic changes, normally appearing from 45 years to old age.
- 5. The menopause arthritic syndrome, involving chiefly the knees.
- 6. Mon-articular phenomena known as "morbus coxae senilis."
- 7. Metabolic disorders of gouty or endocrine nature.
- 8. Neurotrophic disorders of syringomyelia, hemophilia, or tabes.

#### ETIOLOGY

The ctiological distinction cannot be so clearly divided as pathological differences. Similar causative agents may produce primary changes in the synovial membrane, fibrous tissue, or cartilage. Evidence of an infectious process can be found in either the proliferative or the degenerative form, and the infecting organism is by no means specific to the certain type. Likewise, a disturbed physiology may contribute to the initiation of either type of arthritis. The influence of heredity, the lowered resistance of body tissues from metabolic variations, the overloading of the gastro-intestinal system, the traumatic influences, and the disturbances of the nervous system, all must be recognized as factors which may contribute to the disease in any of its forms.

It is interesting to compare theories of bygone days with the etiological conceptions of the present day and to note that they are in many ways ideas in new dress. For instance, the old "humoral" theory, that arthritis is due to a morbid flow of humor to the joint, or the "phlogistic" theory, that it is a chilling of the joint, may be allied with the work of Pemberton, Adson, Barney Brooks, and others, who have investigated the character of the peripheral circulation and the effect of the sympathetic system. It has been demonstrated that the periphery of an arthritic joint is two or three degrees centigrade lower than in normal persons, and the rise and fall of temperature in these joints is slow, indicating a sluggishness of the capillary system. The benefit of heat, massage, and exercise, thus is explained.

The ancient theory that the central nervous system was involved, in which the medulla or spinal

cord was thought to be affected by chilling or infection, has its counterpart in the contributions of Adson, who surgically interferes with the sympathetic rami in the cervical or lumbar spine and creates a dilation of the peripheral capillaries, thus increasing local heat and nourishment to the joint tissues.

Next to the infectious theory, the one given most study is that of the metabolic theory. Now, instead of advising elimination of "red meat" from the diet, as was once a popular custom, the patient may eat meat, but reduce the sugar consumption. Likewise, the chemical poisons, such as the urates, lactic acid, and phosphates, once were firmly believed to be the cause of gouty and rheumatic joints. Now it is the "purines" and "toxic split" products of the colon, as well as faulty metabolism of sugar and a deficiency of proper vitamines in the diet.

#### BACTERIOLOGY

Bacterial invasion may spread through the body in three ways: (1) through the blood stream, (2) through the lymphatics, (3) by direct extension.

In arthritis the infecting agent is considered to attack the tissues through three sources: (1) a metastatic bacterial implantation, (2) toxins emanating from a bacterial focus, (3) an allergic reaction from the bacterial antigen.

The technic of recovering bacteria from the blood, synovial fluid, and lymph nodes, of arthritic individuals, has been greatly improved and much controversy has arisen over the specificity of certain bacterial strains in certain arthritic forms. Cecil, Nichols, and Stainsby found about 69 per cent of cases yielded positive cultures of a hemolytic streptococcus, by culturing the blood clot. Small has developed what he terms the "cardio-arthrides" streptococcus, which he believes is specific. Shands has obtained a high percentage of positive cultures from the synovial fluid; Baer found bacteria frequently in the lymph glands; while Wetherby and Clawson cultured bacteria in 72 per cent of fibrous nodules in rheumatics. Margolis and Dorsey had less positive results, but stress the significance of finding the organisms more frequently in the epiphyseal marrow and bone.

One of the more significant developments of the bacterial background in arthritis is that of the allergic or special cell sensitivity suggested by Zinsser, Swift, Freiberg, Kolmer, and others. While the bacteria found responsible in arthritis show widely differing characteristics, exacerbations and reactions of the joint tissues show a similarity that is strongly of an allergic nature. Tuberculsois and syphilis may be

included in this allergic category. It is worthy of note that administration of vaccines often stirs up exacerbations of the foci as well as the local joint pathogenesis, which undoubtedly must be of an allergic nature, or what is spoken of as especial cell sensitivity. It is thought that, when an infectious agent is harboured and acclimatized locally in some tissue, such as a tonsil, prostate, or tooth, the antigens produce a special cell sensitivity of the individual to the organism. Exposure, disturbed physiology, or other lowered body resistance, then gives rise to the acute exacerbation through sensitized joint tissue.

#### TREATMENT

There is no question but that more is being accomplished for the arthritic in the present day than ever before, yet all therapeutic methods fall short of the desired specific effect. In what, then, can we place our confidence for the improvement of the victims of rheumatic disease?

First, it seems to me that we must follow the suggestions of the cancer-control propaganda, and teach physicians and laymen, as well, that early recognition and thoroughness of treatment is the only hope of saving many cases from severe crippledom. What is a more pitiful sight than the victim of enlarged, sore, and twisted fingers, knees, and hips? Who can say that such a condition could not be prevented by early exhaustive study of the individual, and application of measures which would desensitize his tissues to organisms, and increase body resistance?

Second, it seems that each case must be considered as a law unto itself. The variations of metabolism, in the tissues, the susceptibility and immunity to infectious organisms, and variations in body mechanics, require the full cooperation of many qualified specialists of medicine, and elaborate diagnostic facilities for its understanding.

Third, treatment should be based on a diagnosis as to the classified type.

Fourth, the ultimate aim of treatment must be to raise body-tissue resistance.

The following points are significant in respect to the type of arthritis to be treated. In the proliferative type: (1) Infection usually is plainly discernible because of the inflammatory nature. (2) There is a distinct tendency to bony ankylosis. (3) Bone atrophy often becomes severe. (4) General health is rapidly affected. (5) Pain and physical incapacity is severe and persistent. (6) The carbohydrate tolerance is diminished. Sometimes there is an increase in blood sugar. (7) Fibrous soft tissues often are affected.

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In the degenerative type: (1) Infection is not so prominently active. (2) Joints become misshapen, but bony ankylosis is not so likely. (3) The static effect of gravity in weight-bearing and wear of strain increases the pathology. (4) The general health may appear to be excellent. (5) Pain consists of tenderness, not of the inflammatory type. (6) There are signs of senility, premature or natural. (7) Metabolism may be greatly disturbed, obesity may be marked. (8) Endocrines are often at fault, especially at the menopause.

The viewpoint should be broad. Our treatment obviously must be appropriately selected for the type of case at hand. In the atrophic or proliferative forms, every effort must be made to combat the invasion of the infecting organism. Palliative relief of symptoms and systemic corrections are necessary. Orthopedic protection and reconstruction, together with the various assisting applications of physical therapy, should be employed, using every precaution to prevent ankylosis.

In the degenerative or hypertrophic types, the infectious phase probably will not be so important as the endocrine and metabolic disturbances, so that tonic and stimulative medical treatment, together with orthopedic relief of traumatic and static joint stre's, must be applied. With such a viewpoint in mind, then the clinician should "go the limit" in the use of his therapeutic armamentarium.

#### ELIMINATION OF SYSTEMIC POISONS

There is much merit in the more ancient modes of treatment which accomplish hygienic improvement and stimulate constitutional regeneration. They should promote the elimination of systemic poisons, and the relief of fatigue and mental strain. The constant pilgrimage to mineral springs and health resorts is significant of the benefit of hydrotherapy, sweating, and consumption of large quantities of water containing sodium and potassium sulphates or magnesium salts. Permanent relief often fails, however, because of cessation of treatment after the temporary symptoms subside.

#### COLON IRRIGATIONS

Colon irrigation is again becoming a very popular procedure and is very effective, especially in those of sedentary habits. Statements have been made by Albee and Stern that 90 per cent of the lumbago type of chronic back strain is due to toxins generating within the bowels. The objection to the irrigations is that such treatment cannot be continued indefinitely without harm. Other methods of physical therapy may be mentioned as greatly beneficial, but only in an auxiliary way. Local heat, massage, and

exercise, are essential phases of arthritis treatment.

The intestinal-antiseptic drug preparations have been greatly praised, chiefly by the pharmaceuticalhouse literature, but as yet their effectiveness is questionable.

#### DIET

Dietary procedures are important and will always hold a prominent place in the therapeutic curriculum. Pemberton has stressed the low carbohydrate intake. Present-day therapists would seem to minimize the importance of chemical irritants of the end products of digestion and stress the metabolic endocrine and vitamine values. However, auto-intoxication is the result of bacterial activity on digestive products, and a low-residue diet prevents carbohydrates and proteins from reaching the colon in undigested form. A well-balanced variety of food intake, therefore, should be limited to the caloric demand of the individual. The influence of vitamines has received popular attention, and no doubt plays a prominent role in the development of infected teeth and lowered systemic resistance.

#### ORTHOPEDIC MEASURES

A word should be said here about the orthopedic measures. The field of application is chiefly thought of as pertaining to the crippling aspects, but Osgood, Goldthwait, and Swain, long have stressed the importance of posture. Ptosis and impaired circulation are greatly caused by muscular and skeletal imbalance. The application of surgery to the deformities resulting from arthritis, particularly in respect to such procedures as arthrodesis, synovectomies and arthroplasties, has made a spectacular advance within the past few years.

#### SPECIFIC TREATMENT

Stimulation of resistance and immunity of the body for the bacterial organisms of arthritis may be accomplished in four essential ways: (1) with specific drugs, (2) with non-specific proteins, (3) with non-specific vaccines, (4) with specific vaccines.

Specific Drugs. Little has been accomplished in developing a specific drug. The salicylates long have been relied on, but are palliative only. The synthetic preparations, such as O'iodoxybenzoic acid and similar preparations, have some beneficial qualities. The various dyes, such as mercurochrome, gentian violet and acriflavine, fail to accomplish the desired results. It still is to be hoped that Ehrlich's theory will be fulfilled by finding a drug with a specific toxic action on the protoplasm of the parasite cell, but not on the host.

Protein Therapy. Non-specific protein therapy has had many enthusiastic advocates. The non-specific

vaccines, such as typhoid vaccine, which is having a "play" at this time, fall in the same class as the proteins. The occasional brilliant result is explained in that any protein acts as an antigen and, in cases with good resistance, the complement may be so actively stimulated that the immense non-specific antibody formation takes care of the infection. There is little hope that the non-specific weapons will ultimately win the battle.

Specific Vaccines. We come now to the therapeutic phase which I wish to stress emphatically, though briefly, as being the probable Eureka for which we have fondly hoped. Universal recognition of the infectious background in arthritis gives rise to its actual importance. The lymphoid tissues tolerate the inhabitation of various bacteria until virulence is increased and local resistance is overwhelmed. then invasion advances.

Ever since Frank Billings pointed out so conclusively that removal of focal infection was of paramount therapeutic importance, this practice has been popular. Unfortunately, it has led to much radical and harmful surgery and dental surgery. All too often the first and last thing thought of is the teeth or tonsils. While the importance of infected foci cannot be overestimated in the early stages of arthritis, what are we going to do when all such foci are eradicated and the vicious crippling processes continue? At this point our hope begins to wane, our remedies are speculative, our patient discouraged and ready to try anything of promise.

The orthopedic clinic sees chiefly the derelict class of arthritis. Correction of the deformed joints is futile unless the progress of the disease can be arrested. Usually no more foci are to be discovered and all kinds of treatment have been tried. Twenty-five per cent of cases coming to our clinic have their tonsils and teeth already cared for. Fifty per cent have patronized bath resorts or treatment by irregular doctors. It is quite evident to me that something must take place in this disease similar to chronic syphilis or malaria. The organisms hide out in the tissues and cannot be found. Removing the original focus is like removing the chancre. Burbank, in a paper at the last American Medical Association, demonstrated the finding of streptococci embedded in the tissues of experimental rabbits. Some method must be found to bring them out in the open KI does the spirochete, or else stimulate the tissues to engender a resisting immunity.

Vaccine therapy in arthritis is not a new procedure. However, it now seems an established fact that exactly the wrong procedure was used in the past.

Large doses were given for the purpose of securing severe reactions. Sensitivity was increased and much unnecessary suffering endured. Our purpose now is gradually to build up resistance by desensitizing the tissue, and this must be done by giving small doses with very slight reactions.

There are a number of different opinions as to the serological and bacteriological treatment in arthritis. Cecil has isolated an attenuated hemolytic streptococcus which he has found in the blood of a large series of cases of the proliferative type. He tests the patient with the antigen by the agglutination method and selects the positive strains of bacteria for his vaccine.

Small has isolated an organism which he terms Streptococcus cardio-arthritides. He makes a saline extract of the organisms and uses an extremely small dose.

Touart uses the skin test for selecting the specific organism and administers vaccine appropriately prepared for the individual case.

Weatherby and Clawson have isolated a strain from the blood and prepare a vaccine which is adminitered intravenously. Their dosage is small and they do not get any more than a mild reaction. They depend on the agglutination tests for selectivity of dosage and determination of improvement.

The pioneers of the present-day conception of vaccine therapeutic procedures are Burbank and Hadjopoulos. Originating their work after the methods of Hastings, they rely greatly on the complement-fixation test, as applied in the Wassermann reaction, to classify serologically the organisms which are specific for the individual case at hand. In our clinic we have followed the method of these men because of the thoroughness and definiteness in which they have established their method, and the soundness of its application. We feel that good results are being obtained. Stock antigens of various strains of streptococcus and staphylococcus, colon bacillus, and others, are tested with the patient's blood serum. Cultures are made of whatever foci may be found, be it teeth, tonsils, sinuses, colon, or prostate. Organism thus found also are tested. Where hemolysis is present, the degree of positiveness is noted and vaccine prepared from the organisms proved to be specific.

Preparation of the vaccine differs in many ways from the technic commonly used and is undoubtedly the reason for unusual success. The characteristic principles of their method are:

1. Cultures of the foci are made for autogenous organisms. These, together with a number of stock

bacteria from arthritic patients, are run through the Wassermann technic of complement fixation with the patient's blood.

- 2. The organisms tested are read as positive or negative according to the degree of hemolysis.
- 3. The bacteria for making the vaccine are attenuated with phenol, not heated.
- 4. The positive organisms are selected and a vaccine prepared.
  - 5. Only a mild reaction is imposed.
- 6. Vaccine is given every week for three months and the patient is retested.

The use of this technic requires much patience and thoroughness, but will reward the careful advocate with positive beneficial results.

#### SUMMARY

The classification adopted by the American Committee for the Control of Rheumatism should be studied and adopted by the profession.

The viewpoint of the clinician should be broad and his treatment thorough.

The sensitivity theory is rational, and serologic therapy must be directed with an appreciation of allergic phenomena.

The specific vaccine selected by means of the complement-fixation test is reliable and deserves more general trial.

#### BIBLIOGRAPHY

Arthritis deformans, Nichols and Richardson, Jour. Med. Research, Sept., 1909.

The newer outlook on chronic arthritis, Ralph Pemberton, Surg. Gyn. Obst., Feb. 15, 1932.

The systemic nature of chronic infectious arthritis, Hench, Atlantic M. J. 28:425, 1925.

The localization of streptococci in the tissues of rabbits, Eugenia Valentine and Martha VanMeter,

Four Infectious Diseases, July, 1930.

The bacteriology of the blood and joints in chronic infectious arthritis, Cecil, Nichols and Stanisby, Arch. Int. Med., May, 1929.

Synovial fluid in chronic arthritis, Forkner and Shands, Arch. Int. Med., Nov. 1928.

The localization in animals of bacteria isolated from foci of infection, Allen C. Nickel, Jour. A. M. A., Oct. 2. 1926.

Chronic arthritis, Morgolis and Dorsey, Arch. Int.

Med., July, 1930. Serologic specificity of streptococci having elective localizing power as isolated in various diseases of man, E. C. Rosenow, Jour. Infect. Dis., Nov., 1929.

Diseases of the bones and joints, Goldthwait, Painter and Osgood, Leonard, Boston, 1909.

Chronic arthritis, Swain, Jour. A. M. A., July 27,

Control of intestinal putrefaction by 2-4 dihydroxyphenyl or heptone, Leonard and Feirer, Bull. Johns Hopkins. vol. 48, 1, 1931.

Allergy as a factor in the production of proliferative arthritis. Freeberg, Arch. of Surg., Feb., 1929.

The effect of inflammatory reactions on tissue immunity. Franklin M. Hanger, Jour. Exp. Med.,

Chronic arthritis, its relationship to allergy and skin sensitization, Ernest R. Eaton, Jour. Am. Institute Homeopathy, Feb., 1931.

Int. Med., Feb., 1932.

Serologic significance of streptococci in arthritis and allied conditions, Burbank and Hadjopoulos, Jour. A. M. A., Feb. 28, 1925. DISCUSSION

DR. R. W. MENDELSON (Albuquerque, N. M.): This is a very interesting and very conservative paper. So far as classification is concerned, this is still in a chaotic state and, to me, classification is either infectious or non-infectious. We have a tendency to consider all infectious types of arthritis as due to a streptococcus, but from an etiological point of view, climate plays a very important part, because we know that in the tropics we find patients suffering from arthritis, many of them from a visceral arthritis. Dr. McBride's point that each case is a personal equation, is something we should consider fully. I was very glad he did not lay stress on intravenous medication. I believe the day of that is passed and when we have found a focus of infection we should not consider that alone, but should

consider the case as a whole.

DR. V. E. BERCHTOLD (Santa Fe, N. M.): I want to compliment Dr. McBride on his splendid presentation of his subject. I am sure we all come in contact with cases of arthritis and, by following his suggestions, we will be able to care for them in a better way. I am more or less interested in arthritis because I have had several attacks myself. I was especially impressed with the variety of cases presented by Dr. McBride and his suggestions on vaccine therapy. I know that specific vaccine in small doses will probably add a great deal to the comfort of the patient, compared with the intravenous injection of vaccines. I should like to ask Dr. McBride if it is possible to culture the stools, and, if streptococcus could be obtained from that culture, would it be wise to use that as a treatment?

DR. McBRIDE (c'osing): In answer to Dr.

Berchtold's question about culturing of stools, we find the organism in the stoool and find the same identical strain that we find in cultures from the tonsils. One of the doctors asked me what kind of results we get from vaccine treatment. I can answer that by explaining that the results are not spectacular; they are very slow, and treatment may take three months, six months, or a year. It depends a great deal upon the patient's attitude. The dector should explain to the patient that he must not expect immediate relief, that results are slow, as the patient's resistance is built up against the specific organism. Usually, after three to five months, the ratient will be feeling much better and will be inclined to discontinue treatment, but if possible it is best to have it continued for a longer reriod in these cases.

#### DISCUSSION

(Paper of Dr. William C. Menninger, "The Neurctic Patient," published in SOUTHWESTERN

MEDICINE for November, 1932.) DR. A. B. STEWART (Las Vegas, N. M.): It has been indeed a pleasure to hear this very won-derful paper of Dr. Menninger's. We heard this merning of the tremendous number of people who die each year from cancer and were horrified to find that 120,000 persons succumb annually from certain types of that disease. While the psychiatrist does not blush unseen (if he can help it), his work. we must admit. includes a tremendous group, as statistics show there are over 75,000 commitments each year to public institutions for the control of the insane. There are born each day in the United States 7.000 infants, of whom, under present statistics 270 will spend their last days in public institutions for the insane. All this gives some idea of the tremendous number of psychoses with which we have to deal. I feel we have had a very wonderful

treat in having this paper presented to us. It ccrtanly shows us our tremendous responsibilities toward the class of individual we are now inclined to push away. In my work, which is state work, I have pushed into my office many patients who are neurotic and who have been cast aside by other doc-

DR. C. W. IRISH (Pasadena, Calif.): Dr. Menninger has given an excellent general summary of the modern up-to-date treatment of neuroses. These ncurotic patients most medical men like to escape. It is hard to treat them and get results. They take more patience and time than any other type of patient, and then, too, we like to treat the things we see, can feel, palpate, and be sure of. In regard to the statistics Dr. Stewart spoke about, those who are insane need to be committed, of course, and are total conomic losses, but do we appreciate how much of a loss is suffered in each community by the mental complex? This can bring about as much economic loss as the patient with a decided organic lesion. I would be peak more patience and more kindliness with this class of patients. I appreciate very much Dr. Menninger's wonderful paper.

DR. J. R. EARP (Santa Fe): I believe it might be possible for the troublesome neurotic patient to become an entertaining subject to the busy doctor and in this way, instead of being a nuisance, he can be made an interesting hobby. There is a little book by Hart, called, I believe, "The Psychology of Insanity," which gives some excellent ideas on this subject, which I would recommend for your reading, as it is very valuable not only in telling how to handle neurotic patients, but also how to understand vour fellow creatures. I do not quite understand what Dr. Menninger meant by saying that all psycheanalysis is Freudian. I do not think he means that nobody but Freud can make psychoanalyses. When Freud dies, I am sure that psycho-analysis is going on just the same and will not stand still. You must all have heard that little verse about some of the insects:

"The lady bug has wings of gold, The June bug wings of flame, The bed bug has no wings at all, But it gets there just the same."

My view of the psychoanalyst is that he has wings of gold, and that the psychiatrist, practical-Iv with no wings at all, gets there just the same. Not more than one-half of 1 per cent of the neurotics can ever be treated by a qualified psychiat rist as there are not enough psychiatrists to treat them. About 20 per cent never come to the dector and have to be dealt with by some other methods. I should like to suggest that we think a little about the mental hygiene movement and the prevention of the development of these neuroses. I believe that we can prevent a good deal more succesefully than we can hope to cure, if we pay more attention to the beginning of the neuroses while in the mental hygiene stages.

DR. H. T. JONES (Los Angeles. Calif.): The general practitioners have had a little slur cast upon them for the way they receive these patients. When I went to school, we were taught never to diagnose history until everything else has been investigated. When we are trying to do our best with these patients, they say we are not kind and patient enough. What can one do when a woman comes in and throws her arms around your neck and cries? If you stop and listen to her, you are in for a reck of trouble. I find that cruelty has a way of chaking them out of these set ideas. Now, on the other hand, you will find strong men complaining and saving they cannot do this and that-connot work-vet von can find absolutely nothing wrong with them on physical examination. In such cases I do not know what the general practitioner can do

except refer them to some of these gentlemen who

make a specialty of this type.
DR. MENNINGER (closing): What to do with a lady when she throws her arms around your neck, I think is entirely dependent on the individual. It is always safer to have your desk between yourself and the patient. Then, unless she has long arms, you are safe. The problem which every man has faced in general practice is what to do with the neurotic patient. About 99 per cent of these patients first go to the general practitioner. Frequently they may be beyond his general scope of work and he cannot handle the case, so he refers it to a psychiatrist, just as he would have referred some major surgery case to a surgeon. Very few of the text books give any help on the subject. They forget to tell us what to do in treatment, and we can diagnoze until we are dead, but still have to find some way in which to treat and handle these cases.

#### CASE REPORT Secondary Anemia Due to Malaria.

E. K. ARMISTEAD, M. D. S. D. ARMISTEAD, M. D. El Paso, Texas

(Presented at Staff Meeting of Masonic Hospital. El Paso, Texas, Sept., 1932.)

This is the case of a well-developed white male, age 49 years, farmer by occupation.

Family History: His father and mother are dead. His father died at the age of 75, of some kidney trouble, and his mother died at the age of 30, following labor. He has two brothers living and well; one half-brother living and well; three half-sisters living and well. There is no history of cancer or tuberculosis in the family.

Past History: Patient has had the usual childhood diseases. The patient lived in Mississippi during childhood and had attacks of chills and fever at intervals for several years. He states that he had an attack of appendicitis in 1907 which kept him in bed for two years. No operation. He had pneumonia in 1917, flu in 1918. He also stated to me that, five or six years ago, while living in East Texas, he had chills and fever. He is the father of five living children between the ages of 13 and 25. No history of any venereal diseases was given by the patient.

Present Illness: Patient states that last December he was suddenly taken sick with severe pain around the rib margin, radiating across to the back, accompanied with distention of the abdomen, nausea, and vomiting. The patient has never gained back his strength, and has gradually grown weakcr. In February of this year, his neighbors remarked about the peculiar yellowish color of his skin, which has gradually become more pronounced.

Physical Examination: General Physical Condition: A well-developed man lying in bed comfortably, apparently in no pain. Skin: The skin is smooth and warm and of a lemon-yellow. There are no eruptions or scars. Head and scalp: negative. Eyes: Pupils are equal, regular, and react to light. DECEMBER, 1932 511

Extra-ocular movements normal. There is no strabismus, ptosis, exophthalmos, lacrimation, nystagmus, or conjunctivitis. The eyeballs are lemon-yellow. Ears and nose: negative. Mouth: The mucous membrane is of a pale color. The lips are pale. Teeth are in poor condition. Gums show marked pyorrhea. The tonsils are small. There is no evidence of previous or present involvement of the tonsils. The mucous membrane of the pharynx is of a pale color. Neck: There is no enlargement of the thyroid or salivary glands. There is no limitation or pain on motion. Thorax: The thorax is well formed, symmetrical, expansion is equal on both sides. Lungs: Percussion note is resonant throughout. Breath sounds are vesicular in quality. Tactile and vocal fremitus normally transmitted. No rales were heard. Heart: There is no enlargement on percussion. There are no murmurs or thrills. Sounds are of good quality and the rate is regular. Abdomen: The abdomen is distended, no spasms, no tenderness, no pain or rigidity on palpation. The liver is one finger below the costal margin. The spleen is not palpable. Genitalia: negative. Glandular: no generalized adenopathy. Spine: standing posture good. There is no deformity. Active and passive motions are free, painless and cause no spasm. The upper and lower extremities are equal in length and are well formed. Musculature is good. There are no tremors, no bone deformity, and all joints are normal, and active and passive motions are free in all directions and painless. Reflexes: Knee jerk is sluggish. The other reflexes are normal.

X-ray: On April 19th, this patient was referred to Dr. E. K. Armistead with a diagnosis of gallbladder disease. Dr. E. K. Armistead referred him to Drs. Cathcart, Mason & Dutton for an x-ray picture of his gallbladder. The picture of the gallbladder was taken 14 hours after the dye was administered by mouth, and shows the gallbladder shadow extending down to the lower border of the second lumbar vertebra. A fat meal was given, the gallbladder was again rechecked at 20 hours. No definite gallbladder shadow could be visualized. The gallbladder was functioning normally. A barium meal was given and the stomach and doudenal cap found negative for filling defects. The stomach empties in 6 hours with the advance column entering the ascending colon. No further check was made.

Blood Study: Total white cells, 7000; total red cells, 1,200,000; hemoglobin, 5.3 grams per 100 cc.—32 per cent.

Differential: polynuclears, 80 per cent; lymphocytes, 11 per cent; mononuclears, 7 per cent; eosinophiles, 2 per cent. Kahn and Wassermann, negative.

Treatment: The patient was sent home by Dr. E. K. Armistead, put to bed to rest, and was put on a liver diet. He was advised to return in a week or ten days for further study. He returned to the office on May 7th, stating that he did not feel very much improved. Another check of his blood was made, with the following results: Total white cells, 9000; total red cells, 1,160,000; hemoglobin,

4.65 grams per 100 cc.—26 per cent. Differential: polynuclears, 77 per cent; lymphocytes, 14 per cent; mononuclears, 6 per cent; eosinophiles, 1 per cent

At this time, Dr. E. K. Armstead recommended a blood transfusion. The patient was admitted to the El Paso Masonic Hospital on May 18th. He had a temperature of 99.6°, pulse of 96, and respiratory rate of 24. On May 19th, he was given a blood transfusion. Patient had a severe reaction. His temperature went to 104°, he suffered from vomiting, was restless and was delirious at times. His temperature varied from 100° to 104°, until May 29th. At this time, Dr. E. K. Armistead was called out of town and left the case with Dr. S. D. Armistead for further treatment. Additional blood studies and gastric analysis were done by Dr. L. O. Dutton. Following these studies, quinine sulphate and liver extract were started, and were continued persistently for six weeks with gradual decreased dosage of the quinine. Following the administration of the quinine, almost immediate results were noticed, and the patient's temperature was reduced to normal, never reaching more than 99 degrees for the remainder of his stay in the hospital.

#### DISCUSSION

DR. L. O. DUTTON: On May 29th, ten days after the transfusion, the working diagnosis of pernicious anemia was thought to be in error. After adequate trial of liver therapy, there had been no improvement in the blood picture, and a distinct decline in the patient's clinical condition—to which was added the insult of an acute fever—was rapidly resulting in fatal outcome. In spite of the patient's poor condition, it was undertaken to more definitely establish a correct diagnosis. On May 29th, 1932, the following laboratory results were obtained:

Blood Study: Total white cells, 17,900; total red cells, 1,480,000; hemoglobin, 4.5 grams per 100 cc. (27 per cent, Newcomer); color index, practical unity. Differential: polynuclears, 70 per cent; lymphocytes, 23 per cent; mononuclears, 6 per cent; basophiles, 1 per cent.

The red cells still exhibited marked anisocytosis, poikilocytosis, polychromatophilia, and many normoblasts. Reticulocytes, 42 per cent. Fragility: complete hemolysis at .44 per cent saline, with initial hemolysis—above 0.5 per cent saline. Gastric analysis: alcohol test meal, 300 cc. of 5 per cent alcohol. Specimen No. 1: Residual, free HCl equals 0, total acidity, 10. 30 minutes, free HCl equals 0, total acidity, 10. 75 minutes, free HCl equals 32, total acidity, 42.

Kahn precipitation test, negative. Kolmer quantitative complement fixation test, negative. Stool examination, negative for parasites.

An analysis of the above indicates certain pertinent things. The blood picture first indicates sufficient stimulation of the bone marrow to lead to the expectancy of a rapidly rising erythrocyte count unless there was rapid destruction of cells. The

presence of free HCl in the gastric contents definitely rules out pernicious anemia.

The fragility of the erythrocytes is not typical of that seen in pernicious anemia. Syphilis and intestinal parasites are ruled out as possible factors.

With these data in mind, the history of chills and fever was gone into more thoroughly. It was established that the first attack occurred in childhood (patient lived in Mississippi) and that there have been many subsequent attacks. The story of these chills was typical of tertian malaria. They were promptly relieved by quinine, but quinine therapy was never continued beyond a point sufficient to stop the chills.

In view of this, a restudy of the blood was done, but no parasites were found. The history being so typical, however, it was hyopthecated that the present continued fever was an exacerbation of a quiescent malaria infection initiated by the shock of transfusion. Quinine therapy (20 grs. daily in divided doses) was instituted. Within thirty hours, the temperature came to normal. The general condition became greatly improved and the patient has gone through an uneventful convalescence to clinical recovery.

The behavior of the blood picture during convalescence is not without interest.

June 1st (three days after quinine therapy instituted): Total white cells, 7,500; total red cells, 1,520,000; hemoglobin, 5.35 grams (32 per cent, Newcomer); color index, practical unity; reticulocytes, 36 per cent.

June 3d: Total white cells, 5,000; total red cells, 1,640,000; hemoglobin, 6 grams (36.5 per cent, Newconire); color index, 1.1; reticulocytes, 32 per cent.

June 14th: Total white cells, 5,000; total red cells, 2,280,000; hemoglobin, 8.1 grams (48 per cent, Newcomer); color index, practical unity; reticulocytes, 25 per cent.

June 25th: Total white cells, 6,400; total red cells, 2,560,000; hemoglobin, 7.45 grams; reticulocytes, 15 per cent.

July 29th: Total white cells, 2,800; total red cells, 3,950,000; hemoglobin, 10.32 grams (59 per cent, Newcomer); color index, 0.75; reticulocytes, 4 per cent.

September 10th: Total white cells, 7,500; total red cells, 3,660,000; hemoglobin, 10.6 grams (63 per cent, Newcomer); color index, 0.8; reticulocytes, 5 per cent.

The red cell count, hemoglobin, reticulocyte count and color index have behaved as in pernicious anemia under liver therapy. However, it is to be noted that such behavior was not exhibited until quinine therapy was instituted.

This case presents a clinical course and laboratory findings rather typical of a small but definite group of anemias previously encountered in a malarial region. Their essential characteristic is a pernicioustype blood picture, presence of free HCl in the gastric contents, absence of neurological symptoms, and a mistaken diagnosis of hemolytic icterus or perni-

cious anemia. Their therapeutic peculiarity lies in the fact that neither the anemia nor the general clinical condition of the patient improves under liver or quinine when given alone. In combination, however, the improvement is striking and prompt.

The inference is difficult to escape, after consideration of this type of case, that in certain individuals chronic malaria may sometimes initiate a profound pernicious-type anemia which is in marked contrast to the usual secondary type of anemia seen in malaria. Unless the etiology is proved or suspected and quinine therapy employed in conjunction with liver therapy, a fatal outcome is to be expected—as, indeed, occurred in two similar cases seen in the past which were not treated with quinine, although all the other possible therapeutic means at hand were employed.

#### CASE REPORT

Aneurysm of Ascending Aorta with Rupture into Superior Vena Cava.

E. W. RHEINHEIMER, M. D.

El Paso, Texas

(Presented at Hotel Dieu Staff Meeting, El Paso, Texas, Sept., 1932.)

The patient, male, age 57, railway conductor, married, was first seen on the morning of May 16, 1932, when the chief complaint was pain in the region of the right shoulder, swelling of the neck and head, and "burned spots" on the chest.

Family History: Nothing of pertinent importance developed except that wife cannot live in this altitude because of heart trouble. One daughter, age 19, living and in good health.

Past History: Had only simple diseases of childhood and during entire life has enjoyed good health. For the past two years, there has been a very slight hoarseness which has given no trouble. No history of lues or other venereal infection.

Present Complaint: Began about two weeks previous, with severe boring pain in right shoulder. Did not consult a physician but took one cabinet hot bath which gave some relief from the pain. Following this bath, he noticed several dark-looking spots on the anterior chest, which he took to be burns from the hot bath. Five days later, took two more baths for relief of pain in the shoulder, at intervals of two days, and following these, he noticed that his neck and head were becoming enlarged. Continued his work without difficulty and yesterday one of the railroad officials, noticing the swelling of the neck, insisted that he consult a physician. No cough at any time. No pain except in right shoulder. No difficulty in swallowing. No dyspnea. He insists that the dark spots on the chest and the swelling are due to excessive heat from the cabinet baths.

Examination: Well-developed and nourished male. Slightly obese. The neck and head are greatly

swollen and edematous, with moderate cyanosis of the lips and ears. The facial appearance is similar to that seen after strangulation by hanging. Throat slightly congested and slight pharyngeal edema. Tonsils small. Teeth in fair condition. No trachea! tug. Chest: From the level of the eighth rib on both sides to the neck the skin was a dusky blue and on the anterior chest wall were four cyanotic areas across which numerous dilated venules coursed. There were no retractions or bulgings of the chest wall. Expansion equal on both sides. No pulsations noted even in good light. No pulsations palpable. From the level of the second interspace to the level of the fourth space, the percussion note was dull, this dullness being 15 cm. wide at level of the fourth interspace and extended 9 cm. to the right of the mid-sternal line. Remainder of the lung area showed normal resonance. Normal voice and breath sounds except right base, where there was a tendency to broncho-vesicular breathing. Scattered moist rales right base. Heart: Apex beat not visible or paipable. Thick chest wall makes outline by percussion unsatisfactory. Left border, 9 cm. from mid-sternal line to left. Superiorly the area of cardiac dullness merges with the area of dullness described under the chest examination. This measured 12 cm. wide at the level of the second interspace. Heart sounds of poor quality and seem distant to the ear. No murmurs heard. No thrills. Blood pressure in right arm, 110/70; left arm, 108/70. Heart rate, 92, regular. Vessels: Arteries slightly palpable but not particularly sclerotic. Right external jugular vein greatly thickened but no pulsation. Abdomen: slightly distended and tympanitic. No masses palpable. No areas of tenderness. Liver and spleen not enlarged. No evidence of fluid. Nervous system: Eyes react to light and distance. Superficial and deep reflexes present and normal. No sensory disturbances. Genito-urinary: No scars. No tenderness over kidneys. Blood hemoglobin, 80 per cent. Red cells 4,500,900. White cells 9,200. Polys, 75; small monos, 23; large monos, 2. Blood Wassermann, negative. Urine cloudy, 1028, acid, albumin a trace, sugar negative. Urates and few bladder epithelial cells. Fluoroscopic examination of chest showed tumor mass in mediastinum, extending from level of first rib to upper level of fifth rib, with trachea pushed to the left. Close observation did not reveal any visible pulsation in the tumor. The aortic knob was seen emerging from the upper left angle of the tumor and visible pulsations present in this portion of aorta. Barium mixture swallowed showed esophagus pushed to the left. Heart shadow normal. X-ray plate showed same dense shadow in same area, with trachea pushed to the left. Diagnosis of roentgenenologist was mediastinal neoplasm.

Course. Although feeling well and desiring to go out on his run, patient was put to bed. At 2 a. m., May 17, 1932, he was again seen, at which time the head and neck were greatly swollen and edematous. Swelling so marked that eyes were not visible. Cyanosis of head and neck much increased since

morning. Patient complaining of severe pain in right shoulder and crying for relief. Heart sounds barely audible. Patient in moderate shock and covered with cold perspiration. No cardiac murmurs or thrills. Blood pressure, 88/60, both arms. Given one-quarter grain morphine, with relief from pain in shoulder. Heart action gradually weaker until death at 4:30 a.m.

Summary of pertinent physical findings. Dusky cyanosis from level of eighth rib upward, with dilated venules anterior chest wall. Marked cyanosis and swelling of entire neck and head. Right external jugular vein greatly distended, but not pulsating. Large non-pulsating tumor in mediastinum on clinical examination and confirmed by fluoroscopic and x-ray examination. Check-up Kahn reaction was positive.

Antemortem diagnosis: Mediastinal tumor. Aneurysm of asgending aorta considered but ruled out by absence of pulsation in tumor mass. Negative Wassermann, absence of tracheal tug, absence of murmurs and thrills, and presence of marked venous stasis in area drained by superior vena cava. The presence of marked venous collateral circulation was thought explained by pressure of the tumor on superior vena cava.

Postmortem diagnosis. Aneurysm of ascending aorta, with rupture into superior vena cava. Mitral stenosis.

# CASE REPORT Primary Streptococcus Peritonitis

J. TRAVIS BENNETT, M. D.

El Paso, Texas

(Presented at Staff Meeting of Masonic Hospital, El Paso, Texas, Sept., 1932.)

The patient, a well-nourished, white, female child, 6 years of age, was admitted August 16, 1932, and died August 20, 1932.

Family History: Father and mother are living and well. She has one sister, age 7 years, living and well.

Personal History: Patient has never been a robust child. She has had several illnesses and they have usually been severe. She had "influenza" at the age of 8 months, accompanied by bronchopneumonia, and measles at age of 5 years, accompanied by bronchitis. The patient has had numerous colds, each of which has been followed by bronchitis or bronchopneumonia. She had a tonsillectomy at the ago of 4 years. This has been her only operation, and it apparently had no effect on the incidence of colds and bronchitis.

Onset was acute on the morning of August 13th, with fever of 103 degrees and the appearance of a small, painful, enlarged lymph gland in the right groin. The administration of 5 grains of aspirin caused complete subsidence of symptoms, and the patient appeared to be entirely normal when seen late that afternoon, except for slight pharyngitis. The use of the aspirin, 5 grains every four hours,

was continued the next day, with relief to the patient except for fever of 104 degrees during the afternoon, which subsided by night. Early the next morning, August 15th, the patient developed a fever and suffered a chill at 6 a. m., followed by fever of 104.5°. Three hours later, she had another chill and similar fever. At this time, she began to complain of a generalized abdominal pain and severe pain during micturition. Physical examination at this time showed a high fever, a moderately tympanitic abdomen, and a moderate amount of tenderness over the lower part of the abdomen on both sides. The patient did not localize the pain in any site and on pressure no area of localized tenderness could be elicited. An examination of the blood showed a white count of 9000, with polymorphonuclear cells 28 per cent. A specimen of urine showed numbers of pus cells. The administration of sodium bicarbonate was begun, in addition to the use of aspirin. The child remained very ill throughout the day, with a temperature of 102 degrees, frequent generalized abdominal pains, and severe pain on micturition. She did not vomit, and passed flatus without difficulty. On the morning of August 16th, she seemed worse. Her temperature was fluctuant in type, ranging from 100 degrees to 105.5 degrees. She had two chills, vomiting twice, but passed flatus easily. A specimen of urine contained quantities of pus. She still complained of a generalized abdominal pain and of a very severe pain on micturition. When seen that day, her abdomen was extremely tender to pressure over its entire surface, with no discernible area of localized tenderness. There was definite muscular rigidity over the lower portion of the abdomen on both sides. Rectal examination revealed nothing of note. Operation was decided upon.

Physical History: The patient is a well-nourished and well-developed child of 6 years, very ill, with temperature of 103 degrees. Ears, eyes, nose and throat reveal nothing abnormal. Pupils are equal and react to light. There is no thyroid enlargement and no stiffening of the neck. Skin is free from any rash, petechial or purpuric spots. There is no generalized glandular enlargement, but a gland the size of a pea is palpable in the right groin. Lungs are clear throughout to percussion and auscultation. The heart is normal in size, rate is rapid but sounds are of good quality with no murmurs. Abdomen is moderately tympanitic and extremely tender under pressure, especially across the lower portion. There is a definite rigidity over the entire lower abdomen on the right and left sides. No masses are palpable. Rectal examination is negative. There is no vaginal discharge. Reflexes are normal. Urine: albumin, trace; occasional cast and red blood cells; a small amount of pus cells. A working diagnosis was made of general peritonitis and an immediate laparotomy was performed.

Operation: Beginning at 3:35 p. m. and ending at 4:30 p. m. on August 16, 1932, under ether anesthesia, a laparotomy was performed by Dr. R. L. Ramey. Upon admission to the operating room,

the patient's temperature was 103 degrees, her pulse was 145, and respiration was 32. A midline incision was made. We found a small amount of free fluid and pus on opening the peritoneum. The intestines, cmentum, and peritoneum were acutely inflamed. The appendix was removed with inversion of stump. The appendix was long and acutely inflamed. The pelvis was explored. The uterus, tubes, and ovaries were apparently normal. Two tubes were put down to the pelvis for drainage.

Course: Following the operation, the line of treatment consisted of forcing fluids by vein and proctoclysis and administering small amounts of liquids frequently by mouth. Normal saline was administered intravenously twice daily in 500 cc. amount, and a blood transfusion of 300 cc. was given on the day of death. For two or three days after the operation, the condition of the patient seemed improved, although her temperature fluctuated widely between 100 degrees and 105 degrees. On the third postoperative day, she began to have irrational periods which fairly rapidly became more frequent, until she became comatose a day before death. During this time, her color became more cyanotic, her respiration more labored, and her pulse irregular at times. Throughout the entire postoperative period, the patient was almost constantly troubled with abdominal distention (although she passed flatus freely), and always suffered a great deal of pain during micturition. In spite of a blood transfusion, course was rapidly downward the last day, with increasing cyanosis and failing pulse, death ensuing August 20th.

#### DISCUSSION

DR. J. TRAVIS BENNETT. Faced with a situation as presented here, one can but realize the seriousness of the prognosis. The sudden onset, high fever, marked prostration, and the low white bloodcell count, all indicate the fulminating character of the infection and warrant an unfavorable outlook. With high fever right from the onset combined with other symptoms and the lack of any localized abdominal pain, appendicitis could hardly be considered, and this view was confirmed at the operation. Unfortunately, a culture of the fluid found in the abdominal cavity at the operation was not made, but from its character and the appearance of the fiery red intestinal coils, there is no doubt that this was a case of primary streptococcus peritonitis.

It is interesting to note that Richter, writing in "Abt's Pediatrics," states that there seems to be a seasonal relationship between streptococcic peritonitis and epidemic sore throat and that the disease occurs almost exclusively in young girls. The mechanism of infection of the peritoneum from the sore throat is not clear, but probably an hematogenous route would be the most likely. The throat of our patient was not remarkable except for a mild redness at onset—certainly not the picture of streptococcic sore throat. It seems more reasonable to assume that the course of the infection was through the vagina, as in the 56 cases of pneumococcic peritonitis reported by McCartney and Fraser and

mentioned by Richter. Convincing bacteriologic and other facts are presented by these writers in support of their view as opposed to infection of the peritoneum through the gastro-intestinal tract or by way of the lymphatics from the tonsillar, pharyngeal, and bronchial lymph glands to the subperitoneal lymphatics. Our patient had no vaginal discharge, but a culture might have shown an abundance of streptococci.

Another interesting point was the occurrence of pus cells in the urine of this patient, both prior to and after her admission to the hospital. It may be that the presence of such a large amount of infected fluid in the abdominal cavity in close contact with the bladder, produced a form of cystitis.

DR. R. L. RAMEY: I shall discuss this case briefly from the operative standpoint. Dr. J. Travis Bennett, who had charge of the case, called me in consultation on August 16th. I saw a well-developed child lying in bed with her legs drawn up, features pinched, a rather anxious expression. The abdomen was considerably distended. Moving the palm of the hand gently over the abdomen gave the child a great deal of pain. She did not move the abdominal muscles on respiration, pulse was rapid, temperature was 105.5.° We, notwithstanding the very high temperature which is rather unusual in peritonitis, also the diarrhea which does at times occur, however, in streptococcic peritonitis, made a diagnosis of peritonitis and decided to operate immediately.

A midline incision was made because we considered her peritonitis general and we could obtain better drainage than we could through a McBurney's incision or a right rectus incision. On opening the abdomen, we found a general diffuse peritonitis. The pelvis was filled with a serous exudate and we investigated no further than was absolutely necessary. The appendix was found free and was easily removed. Macroscopically, it did not seem to be the cause of the peritonitis. Two split drains of soft rubber were introduced down to either side of the pelvis. The omentum was brought down and the abdomen was closed. The after treatment consisted of saline and glucose intravenously and the Murphy drip, with the patient in a modified Fowler position.

The temperature and the pulse continued high. The temperature between  $104.6^{\circ}$  and the pulse from 130 to 160 and more.

I have usually followed the hobbies of three distinguished surgeons, as advocated many years ago. Operate early, as advised by Deaver. Give nothing by mouth (the starvation treatment, as advocated by Ochsner), and the Murphy drip. This is routine. In addition we use the duodenal tube when there is distention and distress, giving morphine as needed. We are unable to state the cause of the peritonitis. It may have been due to the appendix, which I doubt, or it may have been due to a streptococcic infection of the throat, as this child had pharyngitis a few days before it was taken seriously ill. I am inclined to think this was the cause, as it is not very

uncommon in children to get this type of infection from the throat.

DaCosta reports thirty-five cases of streptococcic infection, claiming ninety per cent of the cases had a pharyngitis from four to seven days before the peritonitis developed. This patient died on August 20th, four days after her operation.

Some claim these patients die from absorption of poison from the peritoneal cavity, and others, from a lymphangitis. We feel that both play an important part in the termination of this highly malignant type of infection.

#### REFERENCES

Richter, H. M.: In Abt's Pediatrics, vol. 3, p. 514. McCartney, J. E.; and Fraser, J.: Pneumococcal peritonitis, Brit. J. Surg., 9, 479-489 (April, 1922).

#### A CASE OF UREMIA

J. D. HAMER, M. D. Phoenix, Arizona

(Presented at the Staff Meeting of the Good Samaritan Hospital, Phoenix, Arizona, March 28, 1932.)

Mr. B. H., a male of 32, salesman, entered the hospital on Feb. 5th, and was released on February 25, 1932.

His illness began six days prior to his admission, and I first saw the patient three days before admission. On the first visit, the patient was having an attack of influenza, and had been having chills and fever, cough, pain in the chest, a profuse nasal and bronchial discharge, malaise, nausea and vomiting, and severe cramps in the legs, for three days before this first visit. His temperature this night was 104°. Treatment was instituted, and the next day he felt better, with much less severe symptoms, except nausea and vomiting. Emesis of stomach contents continued for two days, then subsided quite well, and at this time it was noticed that there was a slight icterus of the sclerae. However, on the night of Feb. 4, the day before admission, the vomiting started again, and there were fourteen spells that night. At this time, an examination of the abdomen showed nothing abnormal except slight tenderness in the mid-epigastric region. On the morning of Feb. 5th, the patient continued to vomit, and the character changed, first to bile-stained fluid, then to sour fecal-smelling contents. This patient had given me a history of having a kidney infection in 1927, and an attack of kidney-stone colic, consequently a urine was run in the office the day previous, but did not show anything remarkable. By this time, also, the respiratory infection had become quite attenuated, the temperature had been normal for two days, and with the exception of the persistent vomiting, the patient appeared comfortable and free of symptoms. The blood pressure was 140 systolic, and 80 diastolic. I felt that it was necessary to remove the patient to the hospital for further observation, and to see what could be done to stop the vomiting. The character of the emeses

suggested an approaching obstruction; repeated enemata had failed to produce satisfactory results; and the jaundice had deepened slightly.

The past history is interesting because I felt that it had a distinct bearing on the course of this patient's difficulties. As indicated before, he had had some type of kidney disturbance in 1927, and although he was somewhat confused as to its nature, he felt that an old chronic case of gonorrhea had something to do with its production. He was sick at that time for a preiod of three months, and on two occasions had passed a kidney stone. He had no history of scarlet fever during childhood. There was no other illness of importance except that for the past several years he has had a rather severe catarrhal condition of the nose. He is now married; his wife is in Arizona for a mild pulmonary tuberculosis; he has three children, all well. Appetite, weight, and general physical condition have been satisfactory since 1927, although he has been constipated. There is no history of kidney disturbance during the past few years, except an occasional nocturia. However, this patient has, for a number of years past, been a fairly consistent devotce to alcoholic liquors, and during the past fall and winter, has imbibed fairly regularly, with week-end sprees, and the nature, quality, and estimated consumption have been matters of very little concern. Corn liquor, Padre's Wine Tonic, Jamaica Ginger have all contributed to the enjoyment of a splendid week-end.

On admission, the patient had a temperature of 98.6°, pulse of 90, blood pressure of 150/86, the skin somewhat pale, dry, and average temperature. The eyes externally were negative except for slight icterus of the sclerae. Teeth were in fair condition, the throat uniformly red, as were the nasal mucous membranes. The tongue was dry, deeply coated, brownish white in color. The neck was normal. The lungs showed slight dullness over both apices, with a few scattered coarse rales. The bases of the lungs were resonant, with many coarse and medium bronchial rales heard, more on the right side. The heart was normal. The abdomen was slightly distended throughout, and tympanitic. No masses, ascites, or enlarged viscerae were palpable. borygmus could be heard over the entire abdomen, more on the left side. The G. U. system was negative externally. Reflexes, neuromuscular system, bones, and joints were all normal. The white count was 8,200, with 75 per cent polys, and the urine was amber, alkaline, showed a trace of albumin, and 8 to 10 pus cells. Sputum was negative for tubercle bacilli, but showed catarrhalis and pneumococci.

Treatment was at once directed toward controlling the vomiting, and getting the bowels open. Enemata of several varieties were used, intravenous glucose was given in good amounts, and stomach sedatives were given. For forty-eight hours this (Continued on page 522)

#### A CASE OF PLACENTA PREVIA

BENJAMIN HERZBERG, M. D. Phoenix, Arizona

(Presented at the Staff Meeting of the Good Samaritan Hospital, Phoenix, Arizona, Jan. 25, 1932.)

Patient No. 10253 entered the hospital with a diagnosis of placenta previa. On admission, the patient was in a semi-comatose condition and no definite history could be elicited. Later it was determined that she had been bleeding vaginally for more than three days, and her friends had attempted to stop the hemorrhage by packing her with whatever materials happened to be at hand, namely, pieces of old overalls and dirty underwear. The physical examination was generally negative except for the symptoms of extreme exsanguination and vaginal bleeding. She also had tourniquets around both arms and around her upper abdomen, luckily, these were not tight enough to have done any permanent harm.

While preparations were being made in the delivery room, hypodermoclysis was started. Vaginal examination revealed a definite central placenta previa, with the cervix thin and dilated to about 8 cm. The placenta was torn through manually, after which, both feet were brought down, and a 71/2 months premature baby was easly extracted. The baby cried spontaneously and was placed in the incubator. After the delivery, the patient hemorthaged rather profusely, so the placenta was removed manually, which stopped all hemorrhage. Immediately after the delivery, she was given 2 cc. of pituitrin and 1 cc. of hypodermic ergot, also 2,000 cc. of saline hypodermoclysis and 1,000 cc. of 10 per cent glucose intravenously. The laboratory report at this time was as follows: Red blood cells, 3,100,000; white blood cells, 15,590; hemoglobin, 65 per cent.

This was repeated the following day with the following report: Red blood cells, 1,880,000; white blood cells, 13,800; hemoglobin, 45 per cent; polys, 79 per cent; lymphocytes, 21 per cent.

On the basis of the history and the comparatively high white count, infection was suspected, so she was given 6,000 cc. of fluids in 18 hours and a drachm of ergot every 4 hours.

The temperature was under 100 until 24 hours after delivery, when she had a chill, followed by a rise in temperature to 102.2°. This was followed by another chill and rise in temperature to 103.2°. Also at this time there was a distinct decrease in the amount of lochia. The ergot was continued and the fluids increased. In the evening, her temperature dropped to normal, but during the night she had another chill, which was followed by a rise in temperature to 105°.

A very noticeable feature of this case was the comparatively slow pulse. Even with temperatures as high as 105°, the pulse never was over 120, and most of the time stayed under 100.

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#### PUBLIC HEALTH NOTES

J. ROSSLYN EARP, DR. P. H.

Director New Mexico State Bureau of Public Health.

#### IS PUBLIC HEALTH DYSGENIC?

Every now and then I meet some highbrow who on hearing that we have a big infant mortality in the state, remarks: "I hope that you are not trying to make it smaller" in a tone of voice that plainly implies "You poor fish, I'll bet you are. Thank God I am not a sentimentalist; look at my brain."

With such I do not argue in private; unless there is present some third person who might take my silence for consent. But this month I should like to present for your attention a public exposure of the highbrow case. The case is most baldly stated in a recently published Living Philosophy as follows:

"I do not believe that the care and the pity given by the strong to the weak have helped civilization. . . . Men are what they are by the law that controls the cells of germ reproduction, and not by weight of prayer or education."

Health, in the long run, these people maintain, is a matter of breeding a healthy stock. If we save the weakly babies, say they, we gradually weaken the race. It sounds all right until one stops to inquire what is meant by "weakly." It must mean having a low specific resistance to the particular diseases that are killing them. That is when "weakly" has any meaning at all. For we must remember that many of these babies left to natural selection get such an overwhelming dose of virus that the strong are slain as well as the weak.

The highbrows thus believe that in leaving babics to die we breed a race that has a higher specific resistance to certain diseases—a higher racial immunity. No doubt this is true, but what a crude and ignorant method of combating infectious disease! Suppose that we had used this method against yellow fever and malaria instead of anti-mosquito campaigns! Suppose that we had relied on eugenics rather than pure water supplies to eliminate typhoid fever! Is it any more sensible to lean back in our comfortable chairs and leave to natural selection the conquest of diseases like syphilis and dysentery which are killing off babies at the present time?

And among the babies that they throw so intellectually away are poets, statesmen, inventors and scientists whose great gifts were unavailing in the crude "eugenic" test. Oh, you apostles of callow kindliness, you tepid pioneers!

#### THIS HEALTHY DEPRESSION

A good deal has been said in political circles as

well as among vital statisticians about the low rates of mortality that have prevailed during this economic depression. Some have suggested that forced temperance in the matter of food intake has actually done us good. This theory is very roughly handled by Dr. Arnold B. Armstrong of the Metropolitan Life Insurance Company.2 If there are any diseases of overfeeding they must be the chronic degenerative diseases the mortality from which would hardly be affected immediately by a change of habit. Moreover there has been not a decrease but an increase in the mortality from this group of diseases during the depression. Doctor Armstrong attributes our relative health during the last few years to the low incidence of influenza and pneumonia. This affects our death rates both directly and indirectly because when the rates from influenza and pneumonia go up, rates from tuberculosis, heart disease and certain other causes also show a rise.

"Finally," says Dr. Armstrong, "it seems safe to assume that disaster might impend should the curtailment in public facilities for the control of communicable disease and for the carrying on of certain essentials in public health practice approach or reach a point where the absolutely vital community protective measures would be sacrificed."

Reports from the recent annual convention of the American Public Health Association in Washington indicate that many of the leaders of public health in this country are seriously disquieted lest the forces working for health preservation against a growing burden of poverty and unemployment should find themselves in the coming year so handicapped by diminished appropriations that the task will prove too great for their resources.

#### LIGHTING CODES

A useful handbook on lighting standards and practices has just been issued by the Women's Bureau. The pamphlet includes an article by Dr. Janet Howell Clark on the Importance of Good Lighting from the Standpoint of Eye Fatigue as well as the code of the American Standards Association. Although the publication is intended primarly for industrial communities it contains information that will be of interest to all who are responsible for the lighting of schols and other public buildings.

#### REFERENCES

- 1. Julia Peterkin in Living Philosophies. Simon and Schuster, 1931.
- 2. Armstrong, D. B. Observations on the Depression and Public Health, Med. J. and Rec. Sept. 21, 1932.
- 3. U. S. Dept. of Labor Bulletin of the Women's Bureau, No. 94.

## Southwestern Medicine

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## ANNUAL CONFERENCE OF STATE SECRETARIES AND EDITORS IN CHICAGO.

An exceedingly important gathering was the Conference of Secretaries of Constituent State Medical Associations and Editors of State Medical Journals, held in Chicago on November 18 and 19. The entire conference was devoted to the discussion of various methods of group practice and contract practice now in vogue in the United States. The discussion was opened by Dr. E. H. Cary, of Dallas, Texas, President of the American Medical Association, in which he outlined the problems now facing the medical profession of the country, closing with seven pertinent questions, as follows:

- 1. Should we or should we not advocate as a basic principle the Iowa plan of dealing with indigency?
- 2. Should we or should we not develop a comprehensive inclusive county medical society plan of creating a budgeting system whereby the catastrophic needs of the people can be met at a cost within the reach of the families who are unfortunately ill?
- 3. Should we or should we not condemn all hospital insurance schemes for the care of the ill? Or, is it possible to discriminate and say to hospitals that no plan will be recognized as worthy, which includes the physician's services but such hospitals are to be opened to all members of the county medical society, preserving free choice of medical service on the part of the patient.
- 4. Should we or should we not bring all the pressure we have to bear upon the December Congress to establish a different policy toward the hospitalization of non-service disabled veterans?
- 5. Should we or should we not demand the repeal of the 202-10 amendment which has opened the government hospitals to all non-service disabled veterans?
  - 6. Should we or should we not strive both to

limit the number of new medical graduates and to develop the field of immunization and preventive medicine for private practitioners?

7. Should we or should we not fight with all the strength of the body medical in its individual and collective entity, the trend to state medicine, in all of its ramifications, which threatens to destroy our professional integrity and material remuneration and to retard the progress of our science?

Dr. Wm. A. Puscy, Ex-President of the Association, discussed the principles and policies of medicine, as laid down by the Judicial Council, summarizing m twelve points, as follows:

#### PRINCIPLES

- 1—Medicine is the trustee of society in the care of the sick and injured; its policies must always be governed by this fundamental fact.
- 2—The good of society must be the sole aim of its public policies and the good of the patient the first consideration in the relations between physicians and patients.
- 3—Medicine's first responsibility must be to see that its services are available to all men.
- 4—The public interest demands the most competent medical profession possible. Medicine must be an attractive profession to compete successfully with other professions for the ablest young men.
- 5—In the sense that every calling from which a living must be gained is a business, medicine is a business; it must accept the competitive conditions of practical life but, as a profession of high ideals, it must seek to prevent selfish commercialism.
- 6—Experience has shown that the vast majority of disease conditions affecting man can be most satisfactorily and economically diagnosed and treated by a competent individual general practitioner.

#### RESPONSIBILITIES

- 7—The services of medicine include (a) the practice of medicine; (b) the promotion of preventive medicine and the public health; (c) the fostering of research and the increase of knowledge.
  - 8-Medicine's chief concern must be for the in-

dividual physician; the service rendered by individual physicians in the aggregate constitutes the great bulk of medical service. The quality of service which is given depends on the competency of the individual physicians who give it.

9—The medical profession asks for its practitioners: Freedom of opportunity to develop to the limit of their individual capacities.

10—It asks a career of independence under conditions of free and dignified competition.

11—It asks remuneration sufficient for reasonable comfort for the individual and for his family.

12—In its ideals of independence, medicine has a right to control its own affairs. Its history of capacity and altruism justifies this claim.

Dr. George E. Follansbee, Chairman of the Judicial Council, spoke on "The Octopus of Medicine," by which term he referred to contract practice in its various forms and ramifications. He stated that the Judicial Council had laid down the decision that any form of contract practice which removes from the patient the free choice of physician, or which introduces any form of solicitation of patients for any doctor or group of doctors, is unethical and should subject the doctor or doctors involved to expulsion from the county medical society.

Dr. J. M. Robb, of Detroit, discussed the proper attitude of physicians toward the various forms of insurance practice, pointing out the difficulties and dangers, but also stating that forms of insurance could be put into practice which are entirely ethical and highly beneficial to patients and physicians alike.

Dr. Dean Lewis, President-Elect of the Association, spoke on some features of medical education and its relation to medical practice.

Dr. R. G. Leland, Director, Bureau of Medical Economics of the Association, continued the presentation of data regarding contract practice which has been appearing in the Journal and in the Bulletin during the past several months.

Dr. D. A. MacGregor, of West Virginia, outlined the specific forms of contract practice in West Virginia. These are so specific that an outline of them is given below for the information of the readers of this journal:

- Industry checks off for medical care of employee and family.
  - (a) Physician receives entire check-off in some instances.
  - (b) Physician is on a salary in other instances.
  - (1) Balance of check-off is retained by employer, or
  - (2) balance of check-off goes to another physician (or other person) holding master contract.

- (c) Industrial accidents are handled through the State Compensation Department.
- Industrial checks off for both medical care and hospital attention for employee and family (including industrial accidents); so-called "list" practice.
  - (a) Physician located at the place of industry (usually a mine) receives a specified checkoff, or a salary with the industry retaining the surplus from the check-off.
  - (b) The hospital having the contract with the industry receives a separate check-off.
  - (c) The industry is relieved of the expense of medical and hospital care for industrial accidents.
  - (d) The employee does not have the protection or assistance of the State Compensation Department in case he feels that his treatment has been inadequate at the list hospital.
- III. Industry checks off for medical and hospital care of employees for industrial accidents only.
  - (a) Employee, and family are not protected in any manner in regard to ordinary accidents or illness..
  - (b) Only one coal company in the state is known to be practicing this method at the present time.
- IV. A private hospital with a closed staff offers to individuals or groups a contract calling for both medical and hospital attention in consideration of regular monthly payments to the hospital.
  - (a) Contracts are solicited by agents of the hospital.
  - (b) Contracts are offered to individuals who are regular patients of physicians not on the staff of the hospital.
  - (c) Contracts do not cover venereal diseases, injuries due to lawlessness and contagious diseases.
- V. The Citizens' Hospital Service, Inc., has been established "so as to provide hospital, and proper medical and surgical care for the sick and injured, who at the time, are members in good standing of the corporation".
  - (a) The fund is designed primarily to take care of acute conditions, with the exception of those cases coming under state compensation, venereal infections or their sequelae, and cases arising from acts of lawlessness and normal obstetrics.
  - (b) Chronic and incurable cases are limited to one month hospitalization and twenty-five dollars medical fee.
  - (c) The patient has free choice as to the selection of the hospital and his physician or surgeon.
  - (d) This fund is administered by laymen and twenty-five per cent of the funds collected are allocated to "operating expenses".

- VI. Employees Group Insurance Plan conducted by the Union Carbon and Carbide Corporation.
  - (a) Employees carry a group life insurance policy with the Metropolitan Life Insurance Company.
  - (b) All dividends from this group policy are placed in a Special Fund managed by trustees elected by the employees.
  - (c) An employee is permitted to borrow from this fund to pay for medical and hospital care.
  - (d) He is charged four per cent interest and is required to pay back the amount borrowed through pay-roll deductions in fifty-two weeks..
  - (e) There is absolutely free choice in the selection of doctor and hospital.

An interesting presentation was the description of the plan adopted by the Medical Society of New Jersey for the certification of specialists in that state. This is a very revolutionary development, and is worthy of study by other state societies.

In the general discussion, descriptions of several plans of group or insurance practice now in operation in various states were given. The one of especial interest to the writer was that briefly described by Dr. Holman Taylor, of Texas. This was a plan of insurance practice, in which a person could secure medical and surgical attention and hospital care by the payment of about twenty dollars a year. It was operated by the doctors, with open staff hospital, the patient being allowed free choice of physician. In the final discussion, Dr. Olin West issued warning about the forthcoming Report of the Committee on the Cost of Medical Care, which he stated would be brought forth with high pressure publicity. He also stated that the minority report, which represents the stand of the American Medical Association, would be given slight emphasis, but for the medical profession that minority report should be the thing to be studied. The American Medical Association will not object to any plan which will give adequate medical service, which will preserve the free choice of physician, which will preserve the relation of an individual doctor practicing on an individual patient, for a fee which is acceptable to the doctor. Any plan which interposes a third agent or agency between the doctor and the patient, whether that agent be an individual solicitor, a corporation, an insurance company, or a governmental bureau, will be opposed vigorously by the American Medical Association.

#### THE SOUTHWESTERN MEETING

In spite of many difficulties and misfortunes, the Eighteenth Annual Meeting of the Medical & Surgical Association of the Southwest was brought to successful conclusion. Both president and secretary were kept away from the meeting, the former being on duty at the Reserve Officers' Training School at Carlisle Barracks, Pa., and the latter was called home from an eastern trip by critical illness of a member of his family and could not get back to the meeting. Dr. Gekler, the vice president and chairman of the program committee, opened the convention and inducted Dr. F. D. Vickers, the new president into office. From all reports which have come in up to date of this publication, the meeting was enjoyed by all who were in attendance and the papers presented were well received. Many of the doctors on the program failed to keep their appointments, some on account of illness, one on account of compulsory court attendance, and several who felt they could not afford the trip. A more complete account of the meeting will be given in our January issue.

Dr. W. A. Gekler, of Albuquerque, was made President-elect, Dr. F. D. Vickers, of Deming, N. M. going into office as President for the ensuing year. Dr. David M. Davis, of Phoenix, was elected first vice president, and Dr. W. Warner Watkins of Phoenix, was re-elected secretary-treasurer.

El Paso was selected for the 1933 meeting.

## SFCTIONAL MEETING OF THE COLLEGE OF SURGEONS

Phoenix, March 27 and 28

A Sectional meeting of the College of Surgeons, embracing Arizona and New Mexico and El Paso County (by invitation), will be held in Phoenix, on March 27 and 28, 1933, with headquarters at the Westward Ho. Dr. MacEachern, of the College, was in Phoenix recently making the arrangements for this meeting. It is planned on a more elaborate scale than the one held in Phoenix several years ago. A group of surgeons who will be attending the Pan-American Congress in Dallas (March 20 to 25), will be brought to Phoenix and from Phoenix will proceed to Los Angeles for another sectional meeting in the coast city. This series of meetings will insure a large delegation of prominent surgeons for the Phoenix conference. The usual program of clinics and demonstrations, hospital conferences, scientific meetings, community health meetings, group confer-

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ences, radio programs and other features will be held. A more detailed outline of the program will be given in this journal next month.

# PAN-AMERICAN MEDICAL CONGRESS IN DALLAS - March 20 to 25.

A meeting of unusual significance and interest, particularly to the profession of the Southwest, will be the Pan-American Medical Congress to be held in Dallas, Texas, March 20 to 25, 1933. An attendance of more than two thousand is being provided for, with delegates from all the nations of North and South America. This Congress was held last year in Mexico City, and this is its first meeting on the North American continent, except the meetings herctofore held in Havana and Mexico City. A very elaborate program has been projected with sections on General Medicine, General Surgery, Gynecology and Obstetrics, Neurology and Neuro-surgery, Ophthalmology, Rhino-Oto-Laryngology, Orthopedic Surgery, Dermatology and Syphilology, Urology, Radiology, Aviation Medicine, Pediatrics, Tropical Medicine and International Medical Relations. There will be an English speaking and Spanish speaking division in each section, with president, vice presidents and secretary for each such division in each section. In the Section on Radiology, Dr. Warner Watkins of Phoenix is secretary of the English division, with Dr. Albert Soiland of Los Angeles its president. Sectional meetings, general meetings, hospital clinics, round table luncheons, social gatherings, entertainments, will feature this Congress. An unusual feature will be observance of the siesta custom of the Spanish speaking countries, time being allowed on the program for the afternoon nap.

Dr. John H. McReynolds, of Dallas, is president of the Congress. The meeting is under the general direction of the Pan-American Medical Association, of which Dr. Francisco M. Fernandez of Havana, Cuba, is President, and Dr. J. E. Lopez-Silvero, of Havana, is Executive Secretary.

During the week immediately following this Congress, the Annual Dallas Clinical Conference will be held.

#### A CASE OF PLACENTA PREVIA

(Continued from page 516)

A vaginal smear showed long chain streptococci in almost pure culture; however, blood cultures were negative for all periods. She was transfused with 500 cc. of whole blood. Following this, the temperature varied between 102° and 104° for 2 days,

after which it dropped by lysis, reaching  $99\,^\circ$  four days later.

The patient was discharged on the fourteenth day, apparently in good condition, although I later learned that she developed a typical lobar pneumonia two weeks after her discharge, from which she made an uneventful recovery. The baby was kept in the hospital for five weeks and was discharged apparently in good condition, weighing almost 7 pounds.

#### DISCUSSION

DR. C. C. CRAIG: I enjoyed Dr. Herzberg's paper very much. It brings to light several points which deserve to be reiterated and brought forth frequently.

First, liberal use of ergot, which undoubtedly held the uterine wall firm and limited the passage of the organisms from the uterus. These travel by the lymphatic chains through the wall of the uterus and into the lymphatic circulation. Ergot hinders this, and permits the body to localize the process at its site of origin. At the same time this is going on, it also gives a chance for the formation of the leukocytic wall of Bumm, which is one important step for localization and phagocytosis.

The organisms commonly causing this condition are a long and short chain of streptococci, streaphylococci of all kinds, gnococci, various gas-forming bacilli. In all these, and in all conditions, no matter where, in a hovel or in a large maternity ward, cleanliness before, during, and after delivery is to be tried for. Let it be said of none of us, that we introduced a new organism into the genital tract. There should be avoidance of unclean vaginal examination and too frequent rectal examinations, and no manipulations whatsoever unless they can be done under aseptic conditions.

Now then, it is to be noted that this woman's blood count at the time of entry was three million reds, 65 per cent hemoglobin. The following day, with no further hemorrhage, the patient's blood count was one million eight hundred thousand. This is due to dilution of the blood and not to further hemorrhage.

Conclusion: Case is very well cared for and improvement due in part to the liberal use of ergot—which is seemingly non-toxic in this country—the intravenous, subcutaneous application of fluids, and the blood transfusion, which enabled her to overcome her blood stream infection.

#### A CASE OF UREMIA

(Continued from page 516)

was continued before any results were obtained, then fecal matter was obtained by enemata. During this time no further evidence of what might be an obstruction developed, except a persistence of vomiting, sometime fecal material. The patient was given castor oil after it was sure that no obstruction was present, and after the enemata had produced results. During this time, I was wondering if this patient was developing a toxic necrosis of the liver,

or a flare-up in his nephritis, but repeated urinalysis failed to show very serious trouble. In fact, during the whole course of his illness, the urine did not show a very serious nephritis.

During the following week, the bowels were moved daily with saline cathartics, but it was quite a problem to get the patient to retain fluids or food, vomiting was present every day, but I felt he was getting enough retention to keep up the water balance and to prevent acidosis. He was also given intravenous glucose during this time. His urinary output was satisfactory, and there was no change in blood pressure, or other symptom or sign to warn us of impending danger. Meanwhile, too, a gastro-intestinal x-ray examination was made, with negative results.

Ten days, then, after admission, on Feb. 15, I walked into the patient's room and found him much more sick that he was the evening before. He had begun to get delirious over night, and began to have repeated twitching of the muscles and tendons of the arms, legs, face and eyelids. The blood pressure rose over night to 200/110, and he was having smothering spells. The temperature was normal, the pulse 72, strong and regular. The superficial and deep reflexes were all exaggerated. There was a partial aphasia, and thick speech, hallucinations, tinnitus, and diplopia, with a diminution in the acuity of sight, loss of memory and orientation. The body itched badly, especially the chest, scalp, and legs. Vomiting returned with increased vigor, and convulsions seemed to be impending. The face was puffy, and the skin more waxy in color. During that day there was only 375 cc. of urin passed, and a urinalysis showed an alkaline urine, 1012 sp. gr., trace of albumin, occasional hyaline cast, 10 to 15 red blood cells, and 8 to 10 white blood cells. The white count was 6,400. Treatment was directed toward elimination by intravenous glucose, and salines by mouth and rectum, chloral and bromides, by mouth, and intramuscular injections of an ampoule of magnesium sulphate every three hours. A blood chemistry done that day showed nitrogen 75 mgm. and creatinine 7.5 mgm.

The next day, the urinary output increased to 900 cc., and there was a definite improvement in the patient's mental condition, although the twitchings, itching, puffy face, waxy color and vomiting continued. The blood pressure was 170/100. On Feb. 17, the next day, the blood pressure was 148/102, and the twitchings became less severe, except when the patient was asleep. Th dosage of the magnesium sulphate injections was reduced to one every 4 hours. On Feb. 18, the blood pressure was 146/104. Twitchings were much less frequent, and patient was fairly well oriented, talked more coherently and clearly. Pulse stayed full, regular and strong. Urine showed a trace of albumin, an occasional hyaline cast, and occasional pus and blood cell. Magnesium sulphate injections (50 per cent) dosage reduced to one every six hours. Voided 1250 cc.

# MILK

# has almost TWICE the food-energy value when Cocomalt is added

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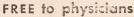
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Prepared according to simple label directions, Cocomalt adds 110 extra calories to a glass of milk—increasing its food-energy value more than 70%. Thus every glass of Cocomalt a patient drinks has the nourishment (food-energy) of almost two glasses of plain milk.

#### What laboratory analysis shows

Cocomalt, prepared as directed, increases the protein content of milk 45%, the carbohydrate content 184%, the mineral content (calcium and phosphorus) 48%. Each ounce of Cocomalt—the amount used in mixing one glass or cup—contains not less than 30 Steenbock (300 ADMA) units of Vitamin D.

Cocomalt comes in powder form, easy to mix with milk—not or cold. At grocers and drug stores in 1/2-lb. and 1-lb. cans. Also in 5-lb. can for hospital use, at a special price.



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On Feb. 19th, the blood pressure was 154/102, and patient began to retain food much better. He voided 1350 cc. during the night and 1875 cc. during the day. On Feb. 20th, the blood pressure was 160/106, and patient voided good amounts, was much less nervous, and began to retain all food given. Output 3700 cc. He was getting, from this time on, from 4000 to 5000 cc. of fluid every 24 hours, and then by Feb. 22, with a blood pressure of 164/104, the magnesium sulphate was reduced in dosage to three times daily. Patient had now gone with only one vomiting spell for 72 hours, and the creatinine had dropped to 2.7 mgm. The urine was now negative. After the 22nd of Feb. until the 25th, when the patient was released, magnesium sulphate was discontiued, because the patient was well on the road to recovery, and the blood pressure on the day of release was 140/90. Since that time, the patient has been under observation, and is doing very well.

This case is interesting to me because of its peculiar development, the sudden onset overnight of a full-blown uremia, ten days after hospitalization, and under constant observation, with frequent checks on the urine, blood pressure, and other factors. He undoubtedly had had kidneys functioning below par for some time past, and they, along with the liver, were being abused by an over-indulgence

in alcoholics of questionable purity, then he had an attack of influenza, and signs and symptoms of a gastro-intestinal or liver upset, progressing to the point in severity of fecal vomiting. At no time did I notice an odor of acetone or uriniferous odor on the breath. Proper clinical observation of this patient might have been lacking somewhat, but certainly the information which was obtained did not show us cause to feel alarmed about kidney elimination. The financial burden to the patient did not permit of adequate laboratory work, perhaps, and, as you all know, we do at times have to



#### THE ROBINSON CLINIC

Alcoholism may be divided into acute and chronic types. Most of the acute cases do not require medical care, but occasionally too much alcohol or poisonous liquors are taken and then expert attention is required. Poisons—methal alcohol, etc.—Usually act so quickly after the first symptoms are noticed, that supportive treatment is all that is left.

Overdoses of alcohol require heroic measures. The stomach should be lavaged, sedatives given to control the delirium and large doses of 50% Glucose solution should be injected intravenously, to control the cerebral oedema; withdrawal of alcohol should be gradual.

Chronic alcoholism usually must be treated in a Hospital under skilled hands. Three to four weeks are required. The psychi background of the ratient must be considered and, for this reason, morphine must not be used to control these patients. The intake of alcohol is gradually reduced and when withdrawal is completed and symptoms have disappeared, a thorough cleansing of the patient's system is indicated. Then rest and tonic treatment will usually return the patient to his family in the above stated time.

Alcoholism is a serious problem because of the economic loss to the patient. There are few businesses where an alcoholic can prosper. But, the profession should remember that there are some individuals who attain their success because of their alcoholism, not in spite of it. These men should not be interfered with and careful judgment on the part of the physician is required in selecting his cases.



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#### Drug and Alcohol Addiction

Paul A. Johnson, M.D. Internist accede to the wishes of patient as to carrying out investigations which he does not want.

This case, also, I think, illustrates the efficacy of the use of magnesium sulphate in some of these cases of uremia. It helps to control edema of the brain, it helps to reduce blood pressure, and it stimulates the kidneys to increase elimination. During the past year, there have been a number of articles appearing in various magazines in this country, as well as abroad, dealing with the use of magnesium sulphate in series of cases of uremia, both in children and in adults.

### FALSE RUMORS CONCERNING VIOSTEROL DENIED BY DR. STEENBOCK

Ever since viosterol was offered to the medical profession about 4 years ago, it has been attacked by various persons. Some of these attacks no doubt were sincerely motivated, but others were seized upon and exaggerated by interests who had no viosterol to sell.

Recently a new form of anti-viosterol propaganda has been reported by physicians all over the country. It is circulated by word of mouth—never in writing—and the apparent purpose is to influence physicians to prescribe vitamin D agencies other than viosterol.

Physicians are being told, for example, that Dr. Harry Steenbock has "condemned" viosterol, that the Wisconsin Alumni Research Foundation "would withdraw viosterol from the market in 90 days," etc., etc.

In answer to these malicious untruths, Dr. Harry Steenbock makes the following statement:

"Viosterol in its various forms has to date been found fully as valuable in medical practice as was anticipated at the time that it was first introduced to the American markets. Up to the present time there have been no reports of any untoward effects from its administration, although originally it was anticipated from the results of animal experiments that some cases of intoxication might result from its use in human medicine. . . . . I see no necessity for reversing my original opinion as to its outstanding merits in any way whatsoever. Any statement to the contrary can be definitely labeled as false." (Signed) H. Steenbock.

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